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Ice Cream Sanitation and Control*

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DURING the past two years the ice cream industry has made rapid advances in sanitation and control. In this paper I shall attempt briefly to outline the most important of these.

Two significant changes have been made in the field of sanitation. The first is the reduction of the aging period of the ice cream mix from 24 hours and longer to 2–4 hours. It has been shown by several investigators that the longer aging period is unnecessary to produce the desired overrun, and the product is equal in every respect to that aged for 24 hours or longer. Since there is an increase in the bacterial content during the aging period, this decrease in time naturally lowers the count, other things being equal.

It has been recently discovered that the ice cream mix may be pasteurized at temperatures as high as 170° F. without materially affecting the flavor, texture, and body of the finished product. Temperatures up to 170° F. actually improve the whipping quality of the mix. One can readily appreciate the significance from a sanitary standpoint of increasing the pasteurizing temperature of such a viscous product. The higher temperature will materially reduce the bacterial content and greatly reduce the chances of pathogenic bacteria surviving. Pasteurizing temperatures of 140°–145° F. are common in the milk industry and have been almost universally accepted by the ice cream makers without any consideration as to the difference between the two products. There is no question that the minimum pasteurizing temperature for ice cream should be 150° F. for 30 minutes, while the maximum may be as high as 170° F. for 30 minutes.

* Read at a Joint Session of the Public Health Engineering and Food, Drugs and Nutrition Sections of the American Public Health Association at the Sixtieth Annual Meeting at Montreal, Canada, September 16, 1931.

Other improvements in sanitation are the introduction of "dry ice," which enables retailers to distribute the product in an economic and sanitary manner, and the introduction of supplementary chemical sterilization—an important factor in reducing contamination from machinery, which may be an important source of bacteria in ice cream unless controlled.

The past year has seen considerable activity concerning ice cream legislation. There were 66 bills introduced in 37 states affecting the manufacture and sale of ice cream, exclusive of the general state revenue bills. Consideration of these will be confined to their bacteriological aspect.

California, in 1927, enacted a law establishing a maximum legal bacterial standard of 150,000 bacteria per gm. for ice cream. Three other states have taken similar steps during the past year. Connecticut has a maximum bacterial standard of 100,000 per c.c., Michigan 150,000, and Iowa 250,000 (packaged goods). Two other states had bills establishing bacterial standards before their legislatures (Minnesota 250,000 per c.c. and Nebraska 150,000 per c.c.), but they failed to pass. Connecticut and Michigan passed laws requiring ice cream mix to be pasteurized.

It is fairly safe to predict that during the next few years a majority of the states will enact laws establishing a maximum bacterial standard and greatly increase their existing sanitary requirements.

NUMBER OF BACTERIA IN ICE CREAM

There should no longer be any question about the ability of manufacturers to produce ice cream with a low bacterial content. Four sets of figures from 3 widely separated states and 1 province are presented for your consideration. Those presented in Table I were compiled through the courtesy of Frank E. Mott, Milk Inspector and Chemist of the Boston Board of Health.

Note the gradual improvement during 1926 and 1927, the sudden improvement for 1928 over the 2 previous years, and the high standards for 1929 and 1930. The great improvement in 1928 and subsequent years was due for the most part to regulations put in force September, 1928, and also to the establishment of a permit system, discussed later.

When California established a legal standard of 150,000 bacteria per gm., a complete survey of the state showed that only 55 per cent of the ice cream samples met the legal standards. The following data compiled by M. E. McDonald, Chief of the Bureau of Dairy Control of the California Department of Agriculture, show the progress made since then.

TABLE I

RESULTS OF BACTERIOLOGICAL EXAMINATION OF ICE CREAM IN BOSTON, MASS., OVER A 5-YEAR PERIOD

Total Samples Examined	Year				
	1926	1927	1928	1929	1930
	996	940	837	775	440
Colonies of Bacteria per c.c.	Per cent of Samples Examined				
Under 50,000	4.9	0.8	0.6	51.8	76.6
50,001 to 100,000	9.6	12.7	20.0	35.4	11.1
100,001 to 200,000	36.4	45.6	57.0	7.8	4.4
Total under 200,000	50.9	59.1	77.6	95.0	92.1
200,001 to 300,000	13.6	16.0	13.0	1.1	2.6
300,001 to 400,000	8.3	10.0	4.2	0.2	0.4
400,001 to 500,000	5.6	5.2	1.8	0.3	0.8
500,001 to 600,000	2.1	1.5	0.5	0.9	0.8
600,001 to 1,000,000	6.9	4.6	0.9	0.7	1.5
1,000,001 to 3,000,000	6.0	2.4	2.0	1.6	1.8
3,000,001 to 5,000,000	3.4	1.3	0.0	0.2	0.0
Above 5,000,000	3.2	0.0	0.0	0.0	0.0

	Per cent of Samples Legal
First survey, 1927–1928	55.0
Second survey, 1928	64.0
Total of all samples, 1929	70.0
Total of all samples, 1930	73.4
First 6 months of 1931	79.0

The above data are compiled on the basis of all samples from all factories in the state, including those making a million gallons annually, and those making only a few hundred gallons. Mr. McDonald states:

> On a volume basis I feel safe in stating that 98 per cent of the ice cream manufactured in California is coming well within the limit of 150,000 bacteria per gm. . . . It is interesting to note that this improvement has been accomplished without the necessity of any legal action. The results of bacteria counts have in the past been used as a guide for detailed inspections rather than as a basis for prosecution. However, we feel that the manufacturers have had ample time to familiarize themselves with the necessary equipment and precautions essential to the manufacture of a quality product and we are using somewhat more drastic means of bringing about improvement.

In Table II are included detailed data from Los Angeles, Calif., compiled by William Veit, City Veterinarian and Director of Meat and

TABLE II

RESULTS OF BACTERIOLOGICAL ANALYSIS OF ICE CREAM OF LOS ANGELES, CALIF., DURING THE PAST YEAR

Colonies of Bacteria per c.c.	No. of Samples Examined	Per cent of Samples Examined
Up to 1000	143	19.2
1,001 to 10,000	336	45.2
10,001 to 50,000	146	19.6
50,001 to 100,000	38	5.0
Total under 100,000	663	89.0
100,001 to 200,000	26	3.5
200,001 to 300,000	14	1.9
300,001 to 400,000	10	1.4
400,001 to 500,000	5	0.7
500,001 to 1,000,000	10	1.4
1,000,001 to 5,000,000	15	2.1
Over 5,000,001	0	0.0
Total	743	100.0

Milk Inspection. They show the extremely low counts of much of the ice cream sold in that city.

Through the courtesy of Russell A. Palmer, Chief Milk Inspector for the Detroit Board of Health, the data in Table III were made

TABLE III

RESULTS OF BACTERIOLOGICAL EXAMINATIONS OF ICE CREAM IN DETROIT, MICH., DURING THE PAST SIX YEARS

Total Samples Examined	Year					
	1925	1926	1927	1928	1929	1930
	201	87	218	86	394	332
Colonies of Bacteria per c.c.	Per cent of Samples Examined					
Under 50,000	51.7	50.6	48.6	74.5	90.3	81.6
50,001 to 100,000	17.4	25.4	21.6	11.7	4.4	10.8
Total under 100,000	69.1	76.0	70.2	86.2	94.7	92.4
100,001 to 200,000	13.4	8.0	14.2	4.7	2.5	7.0
200,001 to 300,000	1.5	8.0	3.2	4.6	0.8	0.6
300,001 to 400,000	6.0	1.0	3.1	0.0	0.7	0.0
400,001 to 500,000	0.5	0.0	2.6	2.3	0.0	0.0
500,001 to 1,000,000	5.0	7.0	3.1	1.1	1.0	0.0
1,000,001 to 5,000,000	3.0	0.0	3.6	1.1	0.3	0.0
5,000,001 and over	1.5	0.0	0.0	0.0	0.0	0.0

available. They show the great improvement which has taken place during the past few years. Compare these with similar data secured by me in 1917, the first time an attempt was made to inspect the Detroit plants and analyze their product. At that time there were no samples that had less than 50,000 bacteria per c.c. and only one, or 0.86 per cent, below 100,000. Out of 116 samples, 64.66 per cent had 1,000,000 or more bacteria per c.c.

Table IV gives the results of bacterial analysis of 1,070 samples of ice cream during 19 months by the Toronto Board of Health, compiled by A. B. Moffat, Director of Laboratories of the Department of Public Health.

TABLE IV

RESULTS OF BACTERIOLOGICAL ANALYSIS OF ICE CREAM BY THE BOARD OF HEALTH, TORONTO, CANADA, JANUARY 1, 1930, TO AUGUST 26, 1931

Colonies of Bacteria per c.c.	No. of Samples Examined	Per cent of Samples Examined
50,000 to 100,000	820	76.6
100,001 to 200,000	120	11.2
200,001 to 300,000	28	2.6
300,001 to 400,000	37	2.8
400,001 to 500,000	12	1.1
500,001 to 1,000,000	34	3.1
1,000,001 to 5,000,000	15	1.4
5,000,001 and over	10	0.9
Total	1,070	100.0

WHAT IS A REASONABLE BACTERIAL STANDARD FOR ICE CREAM?

In view of the fact that legal bacterial standards in various cities of the United States range from 100,000 to 800,000, and in the 4 states which have legal standards from 100,000 to 250,000, per c.c. or per gm., as the case may be, it may be asked, what is a reasonable legal bacterial standard for ice cream? I would reply without any hesitation, 100,000 per gm. Some will consider this standard too rigid. They should be apprised of the fact that the health department of Shanghai, China, considers ice cream containing 100,000 bacteria or more per gm. as unfit for human consumption. However, the principal reasons for establishing this particular figure are:

1. A detailed study of one ice cream plant for 3 years which consistently (99.9 per cent of the samples) produced ice cream with a bacterial count of less than 100,000 during that period showed it was both possible and practical.

2. Experience with a large variety of plants shows that some produce ice cream with a low and some with a high bacterial content. To which class a plant belongs

depends entirely upon the sanitary practices employed. Almost without exception the samples showing high bacterial counts are from a few plants, in which the sanitary conditions are not what they should be.

3. There are great advances in ice cream manufacturing in both methods and equipment. Few industries have more elaborate equipment and machinery, designed in most cases with both utility and sanitation in mind. The influence of the improved methods will be reflected in the bacterial count. The most important of these are aging, pasteurizing, sterilizing and refrigerating. After it passes through the aging process ice cream is kept at or below the freezing point until consumed. While this may not destroy all types of bacteria, it certainly has a tendency to reduce the number of bacteria, and what is of equal importance, prevents the multiplication of most types.

When one considers that much of the milk produced and sold today in many cities comes well within the 100,000 bacterial limit, it is not hard to understand why this is a reasonable standard for ice cream.

Finally, additional data, not presented here, show that the bacterial counts for ice cream in other cities which have no bacterial standard or a very liberal one are far in excess of those in cities which have a very strict bacterial standard.

COLON GROUP AS AN INDEX OF SANITATION

There has been considerable discussion concerning the use of the colon group of bacteria as an index of the sanitary quality of ice cream. It is maintained by some that since this group are inhabitants of the intestinal tract their presence indicates fecal contamination and, therefore, potential danger.

The objections to the colon test are: (1) That it was designed primarily as an index of the sanitary quality of water where their number rather than their presence is used as the criterion; (2) that large numbers of colon organisms in ice cream or any other dairy product do not have the same sanitary significance as in water, since in milk and its products they tend to increase while in water they tend to decrease; (3) That there are 2 groups of closely associated bacteria, which may contaminate milk—the colon or fecal group found in the intestine, and the aerogenes or non-fecal group found in soil, grain, vegetable material, etc. The sanitary significance of the groups is entirely different; yet they are distinguished from each other only by special tests.

The consensus of opinion is that in order properly to interpret the colon test in ice cream or any dairy product, it is necessary to know the history of the sample; and further, it is not a reliable index of pasteurizing efficiency since there is considerable variation in the thermal death point of different strains and of the same strain at different times.

SUGGESTIONS FOR SANITARY CONTROL

Experience has shown that there are several effective methods of control. The first is a law or ordinance. Some of the most important considerations of such a law or ordinance should be:

1. The type of raw materials which should be used.
2. It should not permit the reprocessing of ice cream mix.
3. It should define pasteurization—150° F. for 30 minutes to be the minimum.
4. A maximum bacterial standard should be stipulated—100,000 per gm. suggested as reasonable.
5. It should require a periodic medical examination of all those handling the product.
6. All plants manufacturing ice cream should be required to secure a license from the board of health, and, before such license is issued, be required to pass a rigid inspection. The license should be renewed yearly.
7. All those who sell ice cream should be required to obtain a permit from the board of health. Before the permit is issued, they should be required to pass an examination. The permit should be issued for a period of 1 year only.
8. There should be periodic inspection of all places manufacturing and selling ice cream. They should be inspected at least 4 times each year. The inspector should use a score card to evaluate each place. A copy of the score should be left with the person in charge with written instructions as to any alterations or criticisms.

SUMMARY

The most significant changes from a sanitary standpoint are the reduction of the aging period from 24 hours or longer to 2 to 4 hours; the fact that ice cream may be pasteurized at temperatures as high as 170° F. for 30 minutes without affecting its quality, and the use of " dry ice " and chemical sterilization.

From the standpoint of control a few states are recognizing the value of bacterial standards for ice cream, 4 now having such standards. It is believed that a maximum bacterial standard of 100,000 bacteria per gm. is reasonable. Bacteriological data are given for 3 widely separate states and 1 province showing the progress being made in this direction.

Reasons for and against the colon test as an index of the sanitary quality of ice cream are given. It is generally agreed that it is necessary to know the complete history of the sample before the test can be of value.

Suggestions for the sanitary control of ice cream are given. They include the establishing of a law or ordinance defining the type of raw materials, pasteurization, and a bacterial standard. A license should be required for the manufacture of ice cream; a permit for its sale, and the periodic medical examination of those handling the product should also be required. Provision should be made for regular inspection of all establishments manufacturing and handling ice cream.

Relative Pneumonia Fatality among Surface Workers and Miners*

A Study of 2,603 Cases of Pneumonia and 238 Deaths from Tuberculosis in the Experience of the Tennessee Coal, Iron and Railroad Co., 1925 to 1930 Inclusive

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THE inhalation of various forms of dust inherent in certain occupations and the possible relationship of dust deposit in the lungs to the frequency and fatality of pulmonary disease among certain classes of industrial workers has engaged the serious attention of industrial hygienists for many years.

Pneumonoconiosis has been recognized as a distinct pathological entity since the work of Ramazini (1703), who based his observations on the result of autopsies following death from, among other causes, miners' phthisis.

It has long been observed that pulmonary tuberculosis occurs with comparatively greater frequency in persons following some occupations than others. "Coal miners' phthisis" has been made the subject of much speculation as well as experimental study. Sir Thomas Oliver, one of Great Britain's leading industrial medical authorities, considers the terms "anthracosis" and "coal miners' phthisis" as synonymous, but quotes figures to show that coal miners do not die from tuberculosis with as great frequency as do "other occupied males."

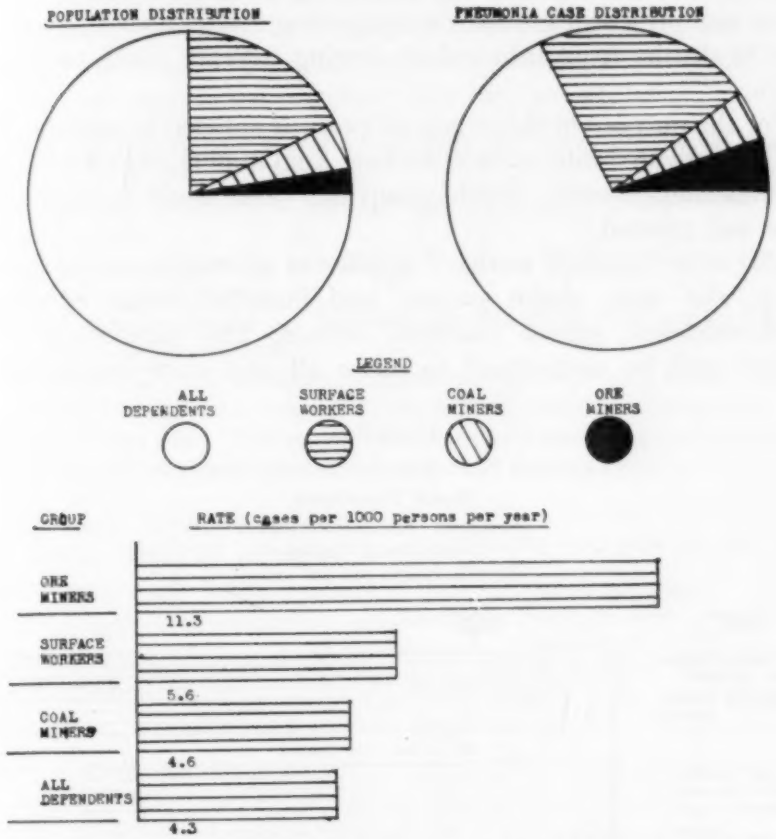
In the United States "all other occupied males" (a somewhat comprehensive group which includes lawyers, physicians, carpenters, plumbers, etc.) exhibit a mortality rate from tuberculosis nearly 3 times as great as do coal miners.

The Illinois State Board of Health published (1927) figures which tended to show that coal miners in that state were the least liable

* Read before the Industrial Hygiene Section of the American Public Health Association at the Sixtieth Annual Meeting at Montreal, Canada, September 14, 1931.

CHART I

TENNESSEE COAL, IRON AND RAILROAD COMPANY
Health Department
Pneumonia Case Incidence in Relation to Population Groups



to respiratory diseases and death of any wage earning group, following the figures with the statement: "Contrary to popular belief, working in coal mines does not predispose to tuberculosis, pneumonia, influenza and other respiratory diseases."

In 1924, we showed a U. S. Government representative through some of our coal mining operations. He asked: "To what extent do your miners have anthracosis?" and upon being told that practically 100 per cent of them had the condition to an extent capable of being demonstrated with the X-ray, he wanted to know what our relative pneumonia fatality was among coal miners as compared to other workers.

The embarrassment occasioned by this experience has resulted in the present study, which is in the nature of a preliminary review.

Our company operates several coal and red ore (hematite) mines;

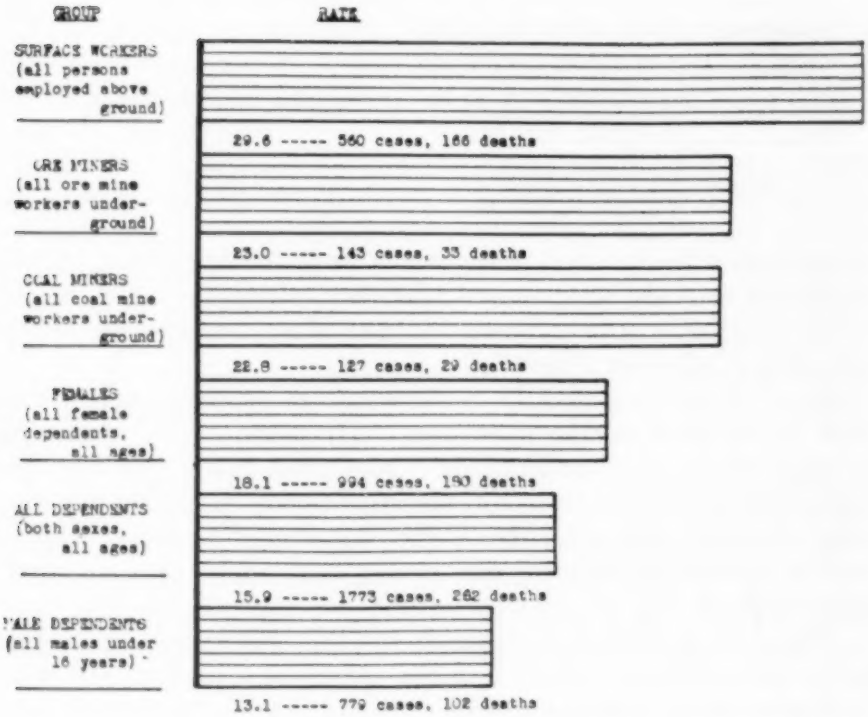
employs more than 60 whole-time physicians; and maintains a 300-bed base hospital. Following the experience just mentioned, we began recording all cases of, and deaths from, pneumonia and tuberculosis. We have classified these according to age, sex, color and occupation, and present a tabulation comprising 2,603 cases of pneumonia, and 238 deaths from tuberculosis during 6 years, 1925 to 1930, inclusive.

For the purpose of this study all persons entitled to medical service have been divided into surface workers, coal miners, ore miners, female and male dependents. Each group has been again subdivided into white and colored.

The term "surface worker" applies to all employees, of whatever status, who work above ground, and includes clerks, accountants, superintendents, school teachers, nurses, and physicians. "Coal miners" will be understood to mean all coal mine employees who

CHART II

TENNESSEE COAL, IRON AND RAILROAD COMPANY
Health Department
Pneumonia Fatality 1925–1930
Occupational Groups
(Rate in deaths per 100 cases)


GROUP
RATE
SURFACE WORKERS (all persons employed above ground)
29.6 ----- 560 cases, 166 deaths
ORE MINERS (all ore mine workers underground)
23.0 ----- 143 cases, 33 deaths
COAL MINERS (all coal mine workers underground)
22.8 ----- 127 cases, 29 deaths
FEMALES (all female dependents, all ages)
18.1 ----- 994 cases, 180 deaths
ALL DEPENDENTS (both sexes, all ages)
15.9 ----- 1773 cases, 282 deaths
MALE DEPENDENTS (all males under 16 years)
13.1 ----- 779 cases, 102 deaths

work underground, including track men, motor men, safety men, mine foremen, etc. "Ore miners" is used to designate all ore mine employees whose duties keep them underground during the working shift. "Female dependents" means all unemployed females of all ages; "male dependents" all males 16 years of age and under.

Among the astonishing and apparently contradictory facts which our experience appears to disclose may be enumerated:

1. Our coal miners have a higher mortality rate from tuberculosis than any other wage earning group.
2. Of all wage earners those employed above ground have the lowest tuberculosis mortality rate.
3. The highest pneumonia case incidence rate is found among underground workers in the iron ore mines.
4. The lowest pneumonia case incidence rate and the highest fatality rate have occurred among surface workers.
5. No death has occurred from pneumonia during the 6 years in any white ore miner. (Only 19 cases have occurred in this group so that 1 more case might mean a 5 per cent fatality rate. The only other group which presents 19 successive cases of pneumonia without a death is white dependents " 2 to 10 years.")

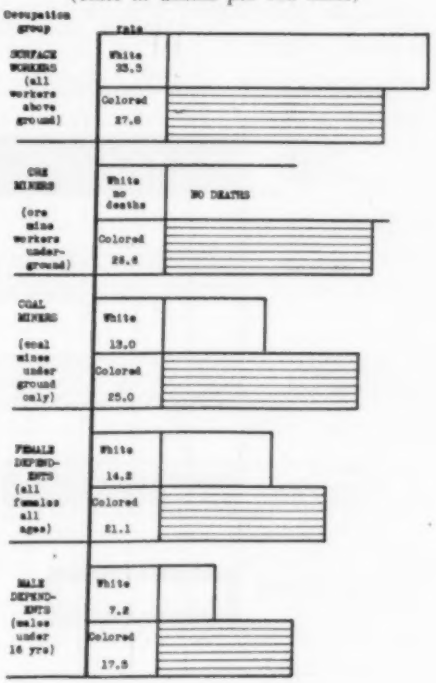
Population figures are estimated on the basis of allowing 3 dependents to each wage earner. This is considered conservative, as other population estimates have used a reciprocal of from 3.17 to 3.25.

It is interesting to note that while dependents constituted 75 per cent of our population, they gave only 68.1 per cent of pneumonia cases, and though surface employees made up only 17.9 per cent they contributed 21.5 per cent of the total pneumonias; coal miners comprised 4.9 per cent of the population and supplied exactly 4.9 per cent of the pneumonias, while ore miners supplied only 2.2 per cent of the population but 5.5 per cent of the pneumonias (see Chart I).

Expressed in another way, the ore miners gave an annual aver-

CHART III

TENNESSEE COAL, IRON AND RAILROAD COMPANY
Health Department
Pneumonia Fatality, Comparative, Color, and Occupational Groups
(Rate in deaths per 100 cases)



age of 11.3 cases of pneumonia per 1,000 ore miners; surface workers 5.6 per year per 1,000; coal miners 4.6 per year per 1,000; coal miners and all dependents a yearly case incidence of 4.3 per 1,000.

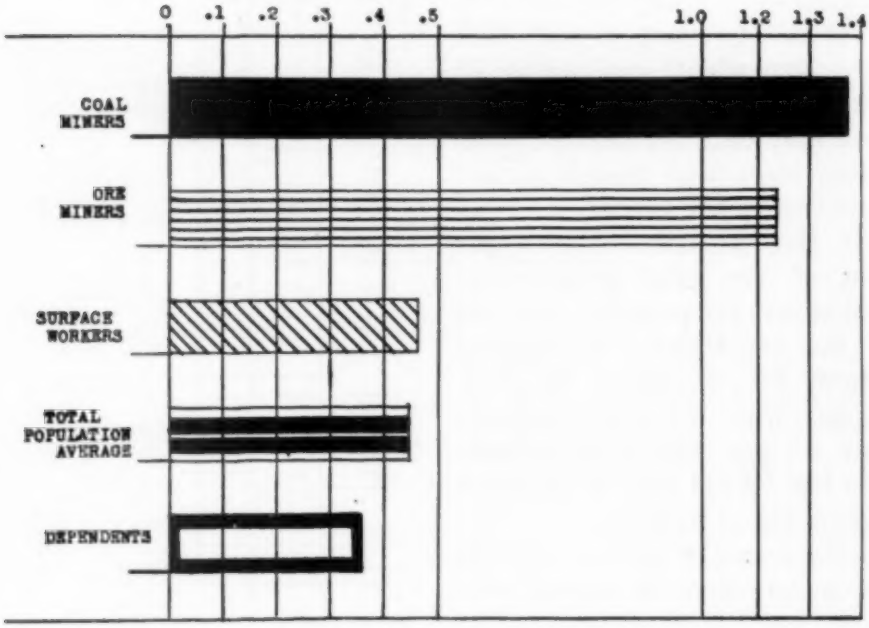
It will be observed that the annual case incidence for ore miners is nearly double that for any other group; surface workers come next, and of all wage earners coal miners suffer least.

The story of pneumonia deaths presents an entirely different picture. The fatality rate expressed in deaths per 100 cases was found to be considerably higher for surface workers: 560 cases with 166 deaths, a rate of 29.6; ore miners 143 cases with 33 deaths, rate 23.0; coal miners 127 cases with 29 deaths, rate 22.8; female dependents 994 cases with 180 deaths, rate 18.1; male dependents 779 cases with 102 deaths, rate 13.1 (Chart II).

The frequency with which facts fail to agree with postulates proves the importance of the statistician to industry and the insurance business. Subdividing the groups into white and colored we are struck by another outstanding anomaly (Chart III). In each it will be noticed that the negro has the highest fatality rate with the exception of white surface workers, who have a fatality of 33.5 against 27.8 for colored. Colored ore miners have died at a rate of 26.6 per 100 cases

CHART IV

TENNESSEE COAL, IRON AND RAILROAD COMPANY
Health Department
Tuberculosis Deaths, by Occupational Groups, 6 Years
(Rates in annual deaths per 1,000 persons)



while no white ore miner has died. Colored coal miners have died at a rate nearly twice that of the white, 25.0 against 13.0. Among dependents, colored females present a rate of 21.1 against 14.2 for white; colored males 17.5 against 7.2 for white, more than double.

It was not intended to include in this report tuberculosis, but since some facts of interest may be brought out, tuberculosis death rates over the same period and for the identical groups are given (Chart IV).

Although coal miners presented the lowest pneumonia fatality rate of any wage earning group, our experience is that coal miners die from tuberculosis with nearly 3 times the frequency of the average for total population, and have a mortality rate more than 2½ times that of surface workers. Expressed in deaths per 1,000 persons per year the rates are: coal miners, 1.28, ore miners, 1.14, surface workers, 0.46, total population average, 0.44, dependents, 0.36.

CONCLUSIONS

That exposure to sudden and extreme temperature changes is a predisposing factor in the etiology of the pneumonias is, we believe, well established, and is the reason for the unusually high incidence rate of pneumonia among our ore miners—more than twice that of any other group.

In our operations several ore mine openings constitute a single operation. Each operation is provided with a large centrally located bath house at which men do their changing. These houses are constantly at temperatures around 80° F., and many of the miners must walk half a mile or more from mine to bath house. Coming from the mine as they do, in perspiration dampened clothing, they are in certain weather subjected to considerable chilling before reaching a bath house which is kept too hot. Leaving an excessively heated bath house they are subjected to a second chilling on the walk home or car line, which may be a mile distant.

Might not these facts more nearly account for the prevalence of pneumonia among ore miners than any condition under which they work, or the presence of possible pneumonoconiosis? The fact that this particular group is more resistant to the destructive processes of pneumonia than are those in whom pneumonoconiosis is absent would appear to argue the soundness of such reasoning.

Practically 100 per cent of our coal miners have anthracosis, but their pneumonia incidence rate has been exactly in proportion to their number in the entire population. A rate of 4.6 cases per 1,000, the

lowest of any wage earning group, compares quite favorably with 4.3 cases per 1,000 dependents, which includes all women and children. The fact that coal miners, in our experience, have exhibited the lowest pneumonia fatality of any wage earning group would appear to indicate that anthracosis has had no influence either as a predisposing factor or in contributing to fatality.

That the etiology of tuberculosis is in some way intimately bound up with calcium metabolism appears to be reasonably certain. Calcium metabolism, regardless of diet, is impossible in the absence of sunlight. May it be tentatively suggested that high death rates from tuberculosis among ore and coal miners might more reasonably be attributed to their deprivation of sunshine than to a condition which apparently does not influence other respiratory diseases?

Toxoid Now Supplied

EXPERIENCE having shown that in the immunization of young children toxoid has certain advantages over toxin-antitoxin, the department has for some time been supplying this agent for routine immunizations against diphtheria. By the method of preparation devised in the department's laboratories, the toxoid has a high degree of immunizing power and gives rise in young children to few disturbing reactions. It has, moreover, the additional advantage of containing no serum whatsoever, and cannot, therefore, bring about any sensitization to serum protein.

For the immunization of school children, the department still uses toxin-antitoxin, the mixture consisting of diphtheria toxin and the specific antitoxin derived from goats. The toxin-antitoxin is used there because the first immunizing injection can be made to serve also as a modified Schick test. As about one-half of the school children entering classes are immune, we find we are able by this manner of using toxin-antitoxin to reduce to as much as 50 per cent the children receiving the second and third injections. If we used toxoid we would be compelled first to give the older pupils the Schick test so as to avoid injecting such a large proportion of immune children. Unless otherwise specified, the toxoid will always be supplied. The manner of use of this preparation is the same as that of the toxin-antitoxin formerly used. The dosage is ½ c.c. if three injections are given and 1 c.c. if only two are given.

Park's studies indicate that with the toxoid now supplied three injections of ½ c.c. at weekly intervals bring about immunity to diphtheria in over 90 per cent of the cases, a somewhat higher proportion than is ordinarily obtained by the use of toxin-antitoxin. An interval of 2 weeks gives a slightly better result, but the difference is not sufficient to adopt this interval unless it is convenient.—*Weekly Bull.*, Dept. of Health, New York, 21, 5 (Feb. 6), 1932.

Tuberculosis in Young Females*

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IT is an axiom of public health that communicable disease cannot be controlled without knowing when, where, and under what conditions it is occurring. In regard to tuberculosis, as well as other communicable diseases, we know fairly well when and where deaths take place, but we do not know well enough the conditions under which these deaths are occurring.

That the tuberculosis rate has fallen enormously of late years is possibly too well known to need comment. In Michigan the rate of fall has not been so great as in the U. S. Registration Area, possibly because it was much below the registration area at the beginning of the century—195.2 per 100,000 in 1900, and 112.0 in 1920, a decrease of 42.6 per cent.

In Michigan the rate in 1900 was 102.4, or 47 per cent less than for the registration area. By 1920 it had fallen to 85.8, a decrease of 16 per cent, and by 1930 to 60.1, a decrease of 41.3 per cent from the 1900 rate, so that while the fall has not been so rapid, the ultimate rate for 1930 is much below that of the probable rate for the United States. The rate of fall by decades has been as follows: 1900–1910, 4.2 per cent, 1910–1920, 12.5 per cent, and 1920–1930, 30.0 per cent.

That this fall is not accidental is indicated by the rates for the past 10 years:

MICHIGAN TUBERCULOSIS DEATH RATES PER 100,000

1921	72.3	1926	69.8
1922	68.1	1927	66.0
1923	70.7	1928	67.7
1924	71.5	1929	66.8
1925	66.7	1930	60.1

While there have been fluctuations, the trend has been steadily downward. In spite of this very satisfactory decline, the rate for young females is still much too high. There is, of course, a considerable variation in this factor between communities.

In Michigan the female rate has fallen, but it is still far higher between the ages 15 and 29 than the male rate. It is well recognized that there is a marked difference in the specific death rate for age in

* Read at a Joint Session of the Vital Statistics and Epidemiology Sections of the American Public Health Association at the Sixtieth Annual Meeting at Montreal, Canada, September 16, 1931.

the two sexes. In the earlier age groups the rates are very similar for both sexes. Beginning, however, with age 10, the rate for females is higher than for males, with a gradually increasing difference until the age group 20 to 24, when it is greatest. From that point it shows some decline for 5 years, and from then on is distinctly lower than the male rate. Between 15 and 29, which is the group that we are attempting to study, the excess of the female over the male rate is very marked. This difference has been recognized and commented upon by many authorities.

From a biological standpoint the higher rate for females at these ages, covering the period of adolescence and early adult life, may be due to the great changes in the organs of the female body which would tend to lower resistance. The important developmental changes, both physical and psychic, that accompany puberty and maturity in females are immensely important factors. The dangers of childbirth must also be considered. The beginning of a disability with fatal termination for those who have an incipient or latent tuberculosis often dates from pregnancy.

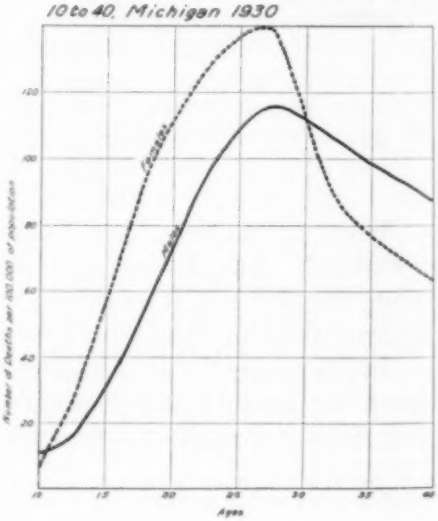
This rate phenomenon has been under observation and consideration for some years. All sorts of reasons have been advanced, the most popular theory being that the difference is due to the increased industrialization of women. I believe we must regard most of these theories more as speculations and opinions than logical explanations.

For this reason we have undertaken a study of the occupation of females in this age group who died from tuberculosis, taking the statement on the death certificate in regard to occupation. It is fully realized that this type of study has very decided limitations because tuberculosis is a lingering disease. In many cases the statement "no occupation" conceals the fact that the person may have been gainfully employed up to the time of disability. It is our purpose to present the facts as they appear on the death certificates, supplemented by additional information obtained through a case study made with the assistance of the Michigan Tuberculosis Asso-

Fig. 1

TUBERCULOSIS IN YOUNG WOMEN

Comparison of the specific death rate for Tuberculosis for Males and Females, ages 10 to 40, Michigan 1930



ciation. This association assigned one of its staff workers to conduct a field study of the deaths which occurred in 1929, which was comprehensive and gave valuable information.

During the years, 1927, 1928, 1929, and 1930, there were in Michigan 2,630 deaths of females between 15 and 29 due to tuberculosis (all forms). The certificates of 289 contained no statement of occupation, or the statement was too ambiguous to enable us to determine whether the person was gainfully employed. We have, therefore, eliminated these 289 and have considered only the 2,341 in which the statement of occupation was fairly clear. The occupations given were: school, 14.1 per cent, and home, 62.3 per cent—not gainfully employed; industry, 23.6 per cent—gainfully employed.

Of the 2,341 deaths, 1,787, or 76.4 per cent, were indicated as not gainfully employed; 554, or 23.6 per cent, were gainfully employed.

In considering these figures, it must be remembered that this age group of women undoubtedly represents that of greatest gainful employment. While we know of no figures that give the ages of employed women, we do know that among many large groups, such as the employees of the Michigan Bell Telephone Company, the average falls well within this age group. The average age of women employed by this company is 22. It is safe to say that the majority of women who are employed while in this age group are married and are in charge of their own homes by the time that they have passed out of it.

The occupation as given on all death certificates is notoriously inaccurate. Of the 289 certificates discarded, 133 gave "housework"

Fig. 2

TUBERCULOSIS IN YOUNG WOMEN

The number of Females dying of Tuberculosis, ages 15 to 29, gainfully employed and not employed

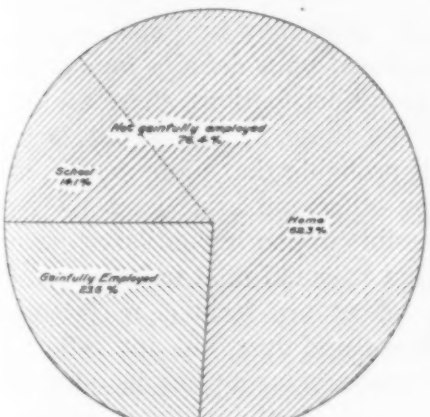
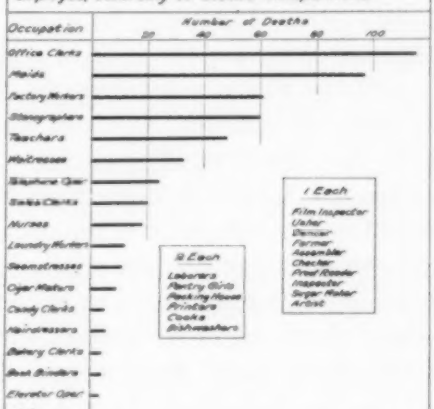


Fig. 3

TUBERCULOSIS IN YOUNG WOMEN

The number of deaths of young women, gainfully employed, according to stated occupations



or "housekeeper." These terms are of no value because there is no means of knowing whether the persons were employed as housekeepers and doing housework for wages, or were simply housewives working in their own homes. An examination of such of the survey schedules as involved names in this group gave little additional information and failed to change the ratios indicated above.

The 1,787 persons not employed have been divided into 4 groups: no occupation 225, at home 306, students 329, and housewives 927.

The group listed as "no occupation," appear on the death certificates as "none," "unemployed," or "no occupation," but a considerable number of these may have been engaged in some gainful occupation prior to their disability, and in the younger age groups particularly more would have been in school.

The second group, "at home," are just as they appeared on the death certificates. It is probable that the statement in the preceding paragraph would apply equally well here. More than half of the unemployed are listed as housewives, and undoubtedly many in this group were in gainful occupations up to the time of disability or pregnancy.

The listing as "students" is, of course, satisfactory.

The survey schedules were studied for further information and resulted in the change of only 6 statements in this entire group. Where a history of previous gainful employment was brought to light, the case was removed from the unemployed category unless the employment was too remote to have been a possible influence on our findings.

It appears to us that there are two distinct reasons why a knowledge of the employment of women is desirable: (1) to know if the occupation *per se* is an influence on our mortality rates; (2) from an administrative standpoint to know where cases may be found in order that our program for control may be based on a definite foundation.

Of the 554 persons engaged in gainful occupations, there are represented 34 different types of work. Of these, 115, or about 21 per cent, are listed as office clerks. It is probable that more women are employed in this capacity than in any other, but aside from the fact that this is a sedentary occupation, possibly in poorly ventilated offices, we can see no reason for supposing that it would tend to lower resistance to tuberculosis. Occasionally offices are located in factories where there might be contact with fumes and dust, but any influence from these would be remote. The sanitary conditions in offices in which the individual spends about one-third of her time, are as a

whole, probably quite as good as in the average home, in which the other two-thirds are spent.

Next in numerical importance is the number employed as maids. This we regard as the most serious problem in the entire list, not because the occupation would have any deleterious effect on the women so employed, but because of the danger to others. Frequently there are young children in the home and in many cases the contact between the maid and the children is very close, with the constant potential danger to the children. I cannot too seriously urge the consideration of this important factor.

Under the term "factory worker" we have a number of women who are machine operators and do other light mechanical work, occupations which, for women, have grown enormously since the war, but from the large numbers known to be employed, it is probable that the rate it not exorbitant, though the possible harmful effects on women of the deleterious trades such as metal polishing must not be lost to sight.

Stenographers might have been included in the group of office clerks because the type of work is similar, but they are shown separately as that designation appeared on the death certificates. While office clerks, as stated above, may be scattered in small groups through manufacturing establishments, stenographers are usually in general offices where ventilation is liable to be better and working conditions more satisfactory.

Next in numerical importance come teachers. While I think many persons will argue that the possibility of infection from teacher to pupil is somewhat remote, the fact remains that most of us would seriously object to having our children in contact with a teacher who had an active tuberculosis, and most school boards will not employ one so afflicted. The number of deaths in this group is possibly not significant since there were only 48 in 4 years. There are about 30,000 teachers in Michigan in this age group, which would give a specific death rate of about 40 per 100,000, much lower than the rate for the entire group.

Next come waitresses. Here the objection would be based on esthetic grounds rather than on any real danger. There were 33 deaths in 4 years.

Telephone operators and sales clerks occupy the next two places, but it does not seem that the number of deaths is sufficient to represent anything more than an accidental incidence.

The ninth occupation is that of nurse. There were 8 deaths in the 4 years. There are more than 16,000 nurses and trained attend-

ants registered in Michigan, approximately 10,000 on the active list for 1930. It would seem, therefore, that this number hardly represents even a normal expectancy.

Of the other 25 occupations, the numbers vary from 12 to 1. In 10 occupations there were only 1 each and in 6 only 2. Table I gives the details.

TABLE I

MICHIGAN DEATHS FROM TUBERCULOSIS IN 34 OCCUPATIONS

Office Clerks	115	Milliners	3
Maids	97	Laborers	2
Factory Workers	61	Pantry Girls	2
Stenographers	60	Packing House	2
Teachers	48	Printers	2
Waitresses	33	Cooks	2
Telephone Operators	24	Dish Washers	2
Sales Clerks	20	Film Inspector	1
Nurses	18	Usher	1
Laundry Workers	12	Dancer	1
Seamstresses	11	Farmer	1
Cigar Makers	9	Assembler	1
Candy Clerks	5	Checker	1
Hair Dressers	5	Proof Reader	1
Bakery Clerks	4	Inspector	1
Book Binders	4	Sugar Maker	1
Elevator Operators	3	Artist	1

Of the 2,341 deaths considered, we were able to secure histories from surviving relatives or others in about 400. Some of these were incomplete, or appeared unreliable, and were discarded, but in 340 the schedules were sufficiently complete for our use. These represent a fair sample, being quite evenly divided as to age, geography, and rural or urban.

Of these cases 64 per cent had sanatorium care at some time during their illness, but sanatorium care in itself does not represent much unless the facts as to the stage of the disease at the time they received this care, their length of stay, and subsequent history are considered. These could not be obtained with any degree of accuracy and as a result we must consider this item as one of interest rather than significance. The same applies to the question of medical service. The largest percentage of these cases (29 per cent) had the attendance of a physician for 2 years or more preceding death, while 25 per cent had care for 1 to 2 years; 17 per cent for 6 to 12 months; 23 per cent from 1 to 6 months; 6 per cent for 1 month or less. These figures simply indicate the continuous care immediately preceding death.

In relation to the conjugal state, approximately one-half were single (49 per cent), and the other half married or widowed. About 63 per cent of the married women had given birth to children and thus been exposed to those dangers incident to pregnancy.

A survey in regard to exercise indicated that about one-third took no exercise, the balance some, and in some cases too much.

In 63 per cent of the cases, it was stated that the patient wore warm clothing; in 21 per cent it was thought that the patient did not dress warmly enough, and in 16 per cent it was regarded as doubtful. As the question of sufficiency of clothing is often a matter of opinion, too much reliance should not be placed on these statements.

If we may regard education as a measure of the intelligence of the group, the following figures should be significant: 7.3 per cent had attended college, 34.2 per cent attended high school, and 58.5 per cent had finished or were in the lower grades.

Contacts, as indicated by family tuberculosis history, were definite in 33 per cent of the cases, and in the balance no history of direct family contact was obtained.

A careful study of the previous history of communicable diseases does not reveal anything of significance in the absence of a control group. For instance, 63.7 per cent of the cases gave a history of measles but we have no means of knowing that any other group which did not die of tuberculosis would not show as great or a greater percentage.

It is interesting to note remarks on many of the survey schedules in regard to pregnancy and influenza. There were many notations to the effect "poor health since influenza (1 year)"; "well until pregnancy (1½ years)"; "miscarriage, never well after"; "following influenza and pneumonia."

Just what effect influenza may have in the lighting up of old tuberculous lesions is an interesting question, but a study of these cases without a control group would be of doubtful value. There seems to be no doubt, however, that the strain of childbirth does lower resistance and the persistence of even slight illness following pregnancy should suggest very careful diagnosis and watchful care.

From this showing it must be very evident that industrialization is not an important factor in the mortality from tuberculosis among young women. Personally I can see no reason to believe that there is any more hazard involved when a young woman leaves her home, whether she goes to school or into an office, in most cases working not to exceed 8 hours under favorable sanitary environment. Whether we consider housewives, employed persons, or students, the problem is in the home and everyone who has experience in public health work realizes that this is the most difficult group to reach.

It is probable that more intensive work in the schools in the higher grades would be of value. Most efficient work is being done in the

lower grades for the control of all types of communicable diseases but there is a decided tendency to neglect the junior high school, the high school and the collegiate groups, and these are the groups that passing out of the schools go into the home and from which the excess mortality of the next few years is recruited. It is, of course, much easier to reach the group collectively in our educational institutions than in the home.

I referred to the developmental changes related to puberty and maturity as both physical and psychic. The physical changes while great, should be regarded as physiological and not pathological, but it is the psychic condition that accounts for such foolish fads as dieting, insufficient clothing, late hours, tobacco and alcohol, all or any of which may be factors in lowering resistance to disease. These habits can be improved only by education, and if our message can be carried into the higher grades while the mind of the student is still plastic we may reach the home of tomorrow, reap the harvest of saved lives, and the goal of lower death rates for which we are all striving.

We have tried to show that the problem is in the home. We have not offered a plan for reaching the home except the suggestion that work in higher grades of school be emphasized.

We are satisfied that gainful occupation *per se* is not a factor in the high rates for tuberculosis among young women, but we must consider the influence of certain diseases and of pregnancy in relation to these rates and this problem offers an inviting opportunity for research.

Germany: Prussia—Family Income and Infant Mortality

FOR the purpose of ascertaining the relation between family income and infant mortality a study was made in Prussia of 297,000 deaths in the 1st year of life which took place in 1913 and 1925–1929, inclusive. The deaths were divided into four groups according to the family income. Although the generally prevailing downward trend of infant mortality was observed in all four groups, there was a considerable difference every year in the four income groups. The infant mortality rate increased steadily for each group with the decrease in income; for instance, in 1913 from 66 per 1,000 live births in the highest income group to 214 in the lowest; in 1927 the figures were 36 and 142, respectively, and in 1929, 34 and 135, respectively.—*Arch. f. sociale Hygiene und Demographie*, Berlin, 6, 2: 89, 1931.

A Basis of Rationing for Federal Prisoners*

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A BASIS for determining the cost of food and a measure of the adequacy or inadequacy of the diets were found to be necessary for the economical, satisfactory and adequate feeding of the inmates of federal prisons or reformatories. Such a basis must be applicable to the average inmate, irrespective of the type of his work, on the assumption that the variation in activity is covered by the variation in appetite.

To determine a basis of rationing, two main courses of procedure were open: (1) to accept data already in existence as to what constitutes an adequate diet with regard to kind and to quantities of foods to be fed; and (2) to determine the amounts and kinds of food used in the various prisons, under conditions that were reasonably effective from the point of view of preparation and distribution, and satisfaction under the restricted conditions that exist in a prison, and finally to modify the result so obtained with regard to dietary requirements as dictated by present-day knowledge of nutrition. We adopted the latter as one that would give assurance of success when modifications were introduced. Furthermore, such a procedure enabled us to evaluate the operations of prisons under existing conditions and furnished a basis for judging the effects of future changes.

Data were assembled over a period of a year from 5 federal institutions having a total average daily population of about 10,000 men: the penitentiaries at Atlanta, Leavenworth, Fort Leavenworth, and McNeil Island, and the reformatory for men at Chillicothe. These data represented the ordinary operation of prisons, with a tendency to modification in the direction of an increased consumption of vegetables and in some cases considerable variations in the consumption of milk, due to advice to the stewards or variations in farm practices.

The foods were subdivided into type groups. The consumption

* Read before the Food, Drugs and Nutrition Section of the American Public Health Association at the Sixtieth Annual Meeting at Montreal, Canada, September 14, 1931.

of each type per man per day in the individual prisons was calculated for each month and for the year, then the per man per day consumption for the 5 prisons for each month and for the year was calculated. Using these averages, adjustments were made, in consultation with Dr. Hazel K. Stiebeling of the Bureau of Home Economics, to furnish what may be considered a satisfactory diet not only from the point of view of nutrition but also of prison conditions. A schedule of food groups, type foods, and the amount of each type (Table I) was prepared for estimating the money value of food for federal prisons.

TABLE I

A BASIS FOR ESTIMATING THE MONEY ALLOWANCE FOR FOOD FOR FEDERAL PRISONS PER MAN PER DAY*

Food Groups	Food Type for Price Basis	Amount lb.
Meats and fish	Beef	0.75
Fats	Oleo	0.15
Flours, starches, cereals	Flour, white	0.80
Dairy products	Milk	1.00
Eggs	Eggs (at 1½ lb. per doz.)	0.03
Sugars and syrups	Sugar, granulated	0.25
Beverages	Coffee	0.10
Leafy, green and yellow vegetables and tomatoes	Cabbage	0.60
Roots and tubers	Potatoes	1.00
Beans and peas, dried	Beans, navy	0.10
Fruits, fresh or canned	Apples	0.15
Fruits, dried	Prunes	0.08
Spices	Salt	0.10
Miscellaneous food adjuncts	Yeast	0.015

* These quantities of food could well be approximated on the average during a month. It is not expected that they will be met in detail each day.

These values were suggested after considering, as indicated above, the kinds and amounts of food eaten in federal prisons for over a year, the kinds and amounts that should occur in economical diets, and the kinds needed to lend palatability to an economical diet.

The contract prices of the various type foods have been applied to the actual quantities of various food groups eaten by prisoners and

TABLE II

THE COST OF THE RATION PER MAN PER DAY CALCULATED FOR TWO PRISONS ON THE BASIS OF THE PROPOSED RATION IN COMPARISON WITH WHAT WAS ACTUALLY SPENT, EXPRESSED IN DOLLARS

Prison	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1—Est.*	.3330	.3232	.3324	.3415	.3332	.3243	.2989	.2963	.2873	.2501	.2519	.2480	.3017
Spent	.2897	.2539	.2522	.2627	.2861	.2827	.2572	.2722	.2667	.2400	.2561	.2398	.2633
Cor.†	.3093	.2859	.2750	.2840	.3044	.3010	.2795	.2945	.2905	.2623	.2659	.2482	.2834
2—Est.*	.2732	.2818	.2817	.2763	.2893	.2946	.2411	.2335	.2859	.2809	.2113	.2025	.2627
Spent	.3548	.4015	.3504	.3439	.3476	.3324	.3029	.3015	.3095	.2868	.3033	.3869	.3268
Cor.	.315	.346	.319	.324	.323	.323	.293	.292	.307	.262	.267	.270	.303

* Without a 5–10% increase
† Correction of amount spent to correspond to 0.75 lb. of meat

to the amounts of foods indicated in the schedule, and comparisons made between the two sets of data and the actual amount of money spent for food for 2 major prisons at monthly intervals throughout the year. The results for these prisons are contained in Table II.

The results agree roughly within 90 to 95 per cent of the actual money spent for foods. The greatest errors appear when there are variations in consumption of the leafy, green and yellow vegetables and the fruits. It is believed that the estimated cost of this schedule of foods plus a probable maximum of 10 per cent will amply cover the cost of food per man per day.*

The value of this ration as indicated is:

Energy value, 3,955 calories	
Weights of food constituents as grams per man per day	
Proteins	140
Fat	116
Carbohydrates	545
Calcium	0.93
Phosphorus	1.62
Iron	0.028

With regard to the food types used for the calculation of prices, the foods selected are those that have occurred in prison diets most of the year and are used in relatively large amounts. There are two places where it may in the future be advisable to select a type of food for each quarter or half of the year rather than one type for the whole year in order to obtain a better evaluation of the cost of the rations—the leafy green and yellow vegetables, and fresh fruits. Seasonal variations in cost and consumption of the type food are particularly noticeable in these groups.

From our studies of prison dietaries and their composition,[1] we find three points that need especial attention: (1) palatability, (2) the uses of vegetables, and (3) the high phosphorus consumption.

Palatability plays an important rôle in any diet. In mass feeding where there is little individual choice of foods palatability becomes one of the prime factors in contentment. Palatability and attractiveness are attained through the use of the natural flavors of food, mode of preparation, or method of service. Meat has an appeal to most appetites and adds flavor to many bland dishes. It also represents a considerable proportion of the cost of any diet. The quantity of meat chosen for the ration,† 0.75 lb. per man per day, is somewhat

* The calculation of the cost of the ration by the Bureau of Home Economics, U. S. D. A., at current lowest retail prices in 12 cities in the United States for March, 1931, showed a variation in cost of from $0.462 in Detroit to $0.320 in Kansas City (with a mode of $0.36 to $0.37). It represents therefore a moderately priced diet adequate in composition.

† The amount given represents all types of meat purchased, but particularly carcass meat.

less than appears to be agreeable to the average prison inmate. The quantity has been reduced only because the cost of a larger amount is not justified, especially with the increase in fruits and vegetables.

There is a need for greater use of vegetables in prison dietaries as carriers of salts and vitamins and also to introduce variety into the meal. The successful increase in the use of vegetables depends upon skill in their preparation or their combination with other foods. The errors of preparation are often those of overcooking or failure to reduce the vegetables to fragments that are appetizing. Adequate facilities for preparation and cooking are essential.*

An economical diet containing considerable amounts of grains and meat is likely to contain a disproportion of calcium to phosphorus. The proposed inclusion of 1 pound of milk or milk products and the green vegetables has brought the radio of calcium to phosphorus to approximately 1 to 2.† While we do not know the best ratio with any surety, it is probable that a wider ratio is not desirable. Milk is not especially effective in correcting the deficiency since its ratio is roughly 1: 1. From certain aspects it appears desirable to add calcium carbonate or lactate under conditions where its presence will not be particularly evident, such as in bread, salt, or stews.‡

The classification of foods into groups has another use—as the basis for evaluating the character of the diet of prisoners. This general grouping of foods, with certain modifications, has been applied to the cost accounting system of the federal prisons so that each month's report contains in addition to the cost of food consumed the average weight per man per day of the various items, based upon the number of inmates assigned to the mess. For this purpose the groups were in some cases subdivided. Table III gives the grouping and code number for each of the groups. With the information obtained it will be possible to evaluate roughly the adequacy or inadequacy of the prison ration and to recommend modifications from month to month. An approximation of the chemical composition and vitamin content of the diet may be readily obtained. While carrots might properly be classified under the yellow vegetables it seems more logical to put them under the roots and tubers.

The evaluation of a diet on the basis of weights of food groups is subject to misinterpretation with regard to the variety of food offered

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* In the new federal institutions now under construction or projected the facilities provide adequately for diversified preparation and cooking.

† It is interesting to note that in the R. O. T. C. mess, included in Table IV, the ratio of calcium to phosphorus was approximately 1 to 2 in spite of the milk and vegetables used.

‡ We have found in connection with the Bureau of Home Economics, U. S. Department of Agriculture, that a palatable bread can be made with calcium carbonate in a potato flour prepared by the spray process.

TABLE III

CLASSIFICATION OF FOODS

.01 Meats and fish, canned
Canned corned beef, canned salmon, canned sardines, etc.

.02 Meats and fish, cured
Bologna, corned beef, dried beef, frankfurters, ham, bacon, etc.

.03 Meats and fish, fresh
Beef and veal, fish, mutton and lamb, pork, poultry and fowl, boned meats, etc.

.04 Lard and cooking oil
Lard, pure and substitute, and cooking oils, etc.

.05 Butter and margarines

.06 Flours, starches, and cereals
Barley, bran, bread, crackers, cream of wheat, corn flakes, corn meal, flours, grapenuts, hominy and hominy grits, oat meal, puffed wheat and other wheat cereals, rice cereals and cornstarch, etc.

.07 Spaghetti, noodles, macaroni, rice as such, and vermicelli

.08 Dairy products
Fresh, canned and powdered milk, cheese, and ice cream, etc.

.09 Eggs
Eggs, fresh and preserved

.10 Sugar and syrup
Sugar, syrup, jelly and similar foods

.11 Beverages
Coffee, tea, and cocoa

.12 Potatoes and sweet potatoes

.13 Roots
Beets, carrots, onions, parsnips, rutabagas, turnips

.14 Leafy, green, or yellow vegetables
Asparagus, beans (string), cabbage, cauliflower, celery, collards, corn (fresh and canned), cucumbers, eggplant, greens (mustard, rape, spinach, turnip), lettuce, peas (green and canned), peppers (green), pumpkin, radishes, rhubarb, sauerkraut, and squash

.15 Tomatoes and catsup

.16 Dried beans, dried peas, and nuts

.17 Fresh fruits and berries

.18 Canned fruits and berries

.19 Dried fruits

.20 Miscellaneous food adjuncts
Ammonium carbonate, baking powder, coloring, cream of tartar, extracts, gelatin, baking soda, tiptopping, and yeast

.21 Spices, relishes, and sauces
Allspice, bay leaves, caraway seed, celery salt and seed, chilli pods, powder and sauce, chop suey sauce, cinnamon, cloves, cummin seed, curry powder, garlic, ginger, horse radish, mace, mustard, nutmeg, paprika, pepper, sage, salt, table sauce, thyme, vinegar, Worchester sauce, and pickles

unless some knowledge is had of the distribution of food substances within a group. Some idea of variety may be obtained from the menus. If those used do not prove satisfactory—and it is possible that a menu may be entirely misleading—then it may be necessary to resort to a special report on the variety of foods furnished under one or more of the various food groups. On the other hand, with a knowledge of the activities of a particular steward or cook it will seldom be necessary for special consideration.

Recently one of us has had the opportunity of examining the food consumption of a R. O. T. C. mess at the Field Medical Service School, Carlisle, Pa., under the supervision of Major Charles T. Spruit, M. C. The type of mess was such that there was probably more than the average consumption of vegetables and fruits. The data obtained for 2 weeks and also the Garrison Ration of the Army, are added, with the permission of the Surgeon General of the Army, in Table IV for the purposes of comparison with the proposed prison ration. With regard to the Garrison Ration it is recognized in the army that it

TABLE IV

WEIGHT OF TYPES OF FOOD CONSUMED BY THE R. O. T. C. MESS, CARLISLE BARRACKS, PA., JUNE 14–21 AND JULY 7–13, TOGETHER WITH SIMILAR DATA PREPARED AS A BASIS FOR RATIONING FEDERAL PRISONERS AND THE PRESENT GARRISON RATION

	R. O. T. C. June 14–21	R. O. T. C. July 7–13	Garrison ration U. S. Army	Proposed Prison
	lb.	lb.	lb.	lb.
Meat	0.65	0.73	1.38	0.75
Fats	0.12 } 0.24	0.09 } 0.21	0.129	0.15
Butter and oleo	0.12 }	0.12 }		
Beans	0.08	0.08	0.08	0.15
Flour and starches	0.90 } 1.35	0.26 } 0.64	1.66	0.80
Bread	0.45 }	0.38 }		
Dairy products	0.88	0.98	0.10	1.00
Eggs	0.18	0.27	—	0.03
Sugars and syrups	0.47	0.22	0.26	0.25
Leafy vegetables, etc	0.60 } 0.96	0.65 } 0.92	0.56	0.69
Tomatoes	0.36 }	0.28 }		
Roots and tubers	1.35	1.13	1.06	1.00
Fruits, fresh and canned	0.48 } 0.48	0.55 } 0.73	0.063	0.15
dried	0.002 }	0.18 }	0.16	0.08
Beverages	0.08	0.06	0.12	0.10
Spices	0.10	0.05	0.03	0.10
Food adjuncts	—	0.006	—	0.015

is not intended to represent the actual food consumption of a soldier but is a basis of determining an allowance of money with which food may be purchased for the mess. The value of certain items was increased beyond what the average man is likely to eat in order to supply additional money for the purchase of green vegetables and a variety of meats and other food. The Garrison Ration does not necessarily represent the most desirable distribution of quantities of food. The basis of estimating the cost of the army ration and the proposed prison basis of estimating cost differ in that the prison basis is intended to cover the actual cost of a diet that is adequate and permits a reasonable variety of food through varied methods of preparation rather than through a variation of kinds of food.

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Experimental Poliomyelitis

Its Contribution to Our Knowledge of the Human Disease*

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THE development of our knowledge of poliomyelitis begins with the separation of the clinical syndrome from unrelated but more or less crippling diseases. Heine, in 1840, and Medin, in 1890, gave us the first clear clinical pictures and, to a lesser extent, the pathology. Caverly's report of the outbreak in Vermont in 1894 and Wickmann's report of the Swedish outbreak in 1905 extended the earlier clinical and pathological observations and showed clearly that paralysis was preceded by a febrile stage. These authors pointed out that many cases did not result in paralysis and suggested the mode of spread of the virus. They were the first to indicate clearly that in many instances contact can be proved, thus giving us the beginning of our present concept of the epidemiology of the disease.

In 1909 Landsteiner and Popper succeeded in transmitting the disease to the monkey. This marked the beginning of progress in the experimental study. Landsteiner and Popper's work was quickly verified and extended by Flexner and Lewis, and Strauss and Huntoon. Infection in the monkey was first accomplished by intraperitoneal inoculation with a suspension of spinal cord from a human source, but it was soon found that this could be done in a variety of ways—intramuscularly, subcutaneously, intranasally, intrathecally, directly into the nerve sheath, and intracerebrally. This last remains the method of choice when positive infection is desired. The animals so inoculated develop a more severe form of the disease with almost 100 per cent fatal outcome, whereas those infected intranasally tend to a higher rate of recovery. Innumerable passages of the original human strains have now been carried over from monkey to monkey and the strains now employed in most laboratories are in large part passage from the

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human material of a decade or more ago, although many new ones have been added.

That the infective agent of poliomyelitis belongs to the group of so-called filterable viruses is now almost universally accepted. The unseen agent not only passes readily through filters, but fulfils the more characteristic property of filterable viruses—their inability to multiply away from living tissue. Diligent search for organisms by many workers has failed to verify Rosenow's and Nuzum's findings. Except for the suggestive work of Flexner, Noguchi and Amoss and more recently of Long, Olitsky and Rhoads with the globoid bodies, all attempts to grow the virus outside of the living body have failed. In laboratory work, the virus is obtained by grinding a piece of the glycerolated cord, or of cord of a freshly killed animal, with fine sterile sand to which normal saline in the ratio of 1 gm. cord to 20 c.c. saline has been added. The suspension is then either centrifuged and the supernatant fluid used, or filtered through a Berkfeld candle.

The virus withstands glycerolation for years. Desiccation over KOH for weeks fails to alter the virulence appreciably. It is resistant to phenol in 0.5 per cent strength, but H_2O_2 and $HgCl_2$ have a destructive action, and heating at 65° for half an hour destroys it. Freezing temperatures as low as —2° to —4° C. for weeks do not affect it, and at 4–5° C. it can be kept almost indefinitely. Clark, Schindler and Roberts have recently found the virus to survive saturated NaCl solutions ordinarily destructive to living cells.

The virus is readily rendered non-infective by immune serum. The action of the immune substance does not seem to be of a virucidal nature, however, but simulates the toxin-antitoxin phenomenon of diphtheria. By means of cataphoresis the non-infective mixture of virus-immune serum can be dissociated, the virus migrating and concentrating at the anode, indicating an electronegative charge. That the neutralizing mechanism obtains for a short time at least in the animal body was shown by Olitsky, Rhoads and Long, who were able, by this method, to separate the virus from the cord of a recovered animal 23 days after infection, although the cord suspension before cataphoresis proved innocuous by intracerebral inoculation into normal monkeys. Burnet and Macnamara have recently suggested the existence of immunologically distinct strains of the poliomyelitis virus. They believe their Australian strain differs immunologically from the Flexner and Aycock strains. The paucity of data and the obvious differences in the virulence of the strains compared leave considerable doubt of the existence of any fundamental immunological differences in those studied.

The experimental disease in the monkey (*Macacus rhesus*) is a faithful clinical and pathological reproduction of the human disease. The monkey remains the one animal in which the human disease can be reproduced. Immediately following inoculation, the animal appears well and continues to act normally for several days. The first indication of infection is an elevation of the temperature of from 1° to 3° above the normal range of the animal, which varies between 100° and 103° F. The rise is constantly found and precedes the appearance of paralysis 1 to 3 days. Shortly after the rise of temperature the animal begins to refuse food and shows a disinclination to climb about the cage. About the same time, the fur becomes ruffled and frequently a tremor develops. After 24 to 72 hours the temperature reaches a maximum and then drops sharply. As the maximum is approached and reached, the animal shows obvious signs of illness, remaining hunched in a corner, the fur ruffled, tremor present, and food being generally refused.

Paralysis is usually first noted with the beginning of the drop in temperature. As in the human disease, the involvement of parts follows no rule and is characteristically haphazard. Paralysis may begin in either upper extremity and extend to all, or in one or both legs and extend upward, till the animal is completely paralyzed. With the appearance of the paralysis the animal becomes prostrated and the temperature becomes subnormal. At times a drop of 6° to 10° within 24 hours is observed. This severe involvement and collapse is noted in well over 90 per cent of animals infected by the intracerebral route and death follows in a few days.

Although with careful nursing life can be maintained for several days or weeks, death eventually occurs from asthenia or involvement of the entire breathing apparatus (intercostal muscles and diaphragm). Deaths due to cerebral and bulbar involvements have been described, but I have failed to observe such types in the past 5 years. Between 5 and 10 per cent of animals so infected recover with varying amounts of paralysis. Upon recovery they return to normal activity in a few days to a week or two, hampered only by a residual paralysis. The intranasal and other routes of infection yield a somewhat higher number of recoveries. As in the human disease, paralysis is frequently followed by deforming contractures.

The pathologic lesions found at autopsy are entirely analogous to those in the human form. Irrespective of any difference in the mode of infection in man, and the route of inoculation employed in monkeys, the lesions are characteristic and analogous. The outstanding characteristic lesions are found in the central nervous system. On

first view, the macroscopic changes are not particularly striking. The cord and brain show edema and congestion of the meninges. The edema of the cord may at times be somewhat more marked in some areas and appear patchy. On sectioning the evidences of edema are more pronounced—the substance pouts above the edges, has a darker gray-pinkish appearance and not infrequently minute hemorrhages are seen. The brain and pons show less involvement except for meningitis at the site of inoculation.

Changes in other parts of the body are not characteristic. Some cloudy swellings of the large parenchymatous organs are frequently seen and these changes also are observed on histological examination. The greatest changes outside the central nervous system are found in the lymphatic structures throughout the body. These are more readily noticed in the mesenteric lymph nodes, which are somewhat enlarged, and on section show necrotic areas and considerable edema and infiltration. This swelling often extends to Peyer's patches, and has given some ground to the notion of an intestinal route of infection.

The characteristic changes, however, are found on histologic examination of the cord and, to a lesser extent, parts of the brain. The lumbar and cervical segments usually present the greatest changes. In the early stages of paralysis a diffuse infiltration is seen involving both posterior and anterior parts of the gray matter of the cord. The type of cells varies with the stage of the disease, being in large part polymorphonuclear leukocytes in the earlier stages, soon replaced by cells of the lymphocytic series and microglial cells.

It is peculiar and striking that whereas the infiltration of phagocytic cells seems general, involving both the anterior and posterior parts of the cord, it is the anterior horn cells almost exclusively that undergo degenerative changes. The first change noted in the neurons is central chromatolysis, followed by complete solution of the Nissl substance. The nuclei and cytoplasm then swell and become very pale, and the nuclei disappear. At times the nuclei shrink, stain more darkly and assume an eccentric position in the cells. The cytoplasm then begins to stain irregularly, becomes reticulated and vacuolated and often contains several polymorphonuclear leukocytes. Granular degeneration follows, and all internal neuro-fibrillar structure is lost. With the onset of degeneration, neuronophagia proceeds. The site of the former neuron is soon filled by polymorphs, lymphocytes and glia cells. Very rapidly the polymorphonuclear leukocytes disappear and the microglia undergo enormous proliferation, these cells soon forming the bulk of the exudate in the gray matter, and are found clustered about the anterior horns indicating the former site of the neuron.

It has been suggested recently that our concept of the manner of attack of the virus on the anterior horn cells may be erroneous. Our belief, largely based on the work of Flexner and his coworkers, has been that the virus reaches the cord first through passage or propagation along the lymphatics and vascular system, thus reaching the nerve elements, and because of the resultant perivascular reaction the anterior horn cells suffer from ischemia and die.

In several recent publications, Fairbrother and Hurst renew the concept first promulgated by Leiner and v. Wiesner and present data based on histologic studies of the experimental disease to indicate that the action of the virus may be directly on the cells, and that this toxic action antedates the generalized infiltration and perivascular cuffing found at autopsy in human cases. The work of these authors, although carefully carried out, is yet to be confirmed. The researches of the earlier workers of the inter-passage of both virus and immune substances from blood stream to spinal fluid and in the reverse direction under specified conditions remain, however, convincing evidence of the importance of these fluids in transporting the virus from the portal of entry to the central nervous system.

Sufficient experimental evidence has been accumulated to indicate that the virus may readily enter the body through the nasal mucous membrane. The significance of these findings in the spread of the disease is obvious. In addition, epidemiological and immunological studies have consistently indicated contact and carrier factors in the spread of the virus.

It was found early that animals that had recovered from an attack resisted reinfection by any route. The time of the development of this protection varies. Although it has been observed in the acute stage of the disease it usually does not appear until a few weeks have elapsed.

The nature of this resistance was first shown by Landsteiner and Levaditi, who mixed the serum from a recovered monkey with the virus. They found that upon injecting a portion of this mixture containing an infecting dose of the virus intracerebrally into a normal monkey, the animal failed to succumb. Similar experiences were encountered when the serums of recovered patients were used in place of convalescent monkey serum. These findings have been confirmed many times and give us, within certain limits and when adequately controlled, an experimental test for immunity to the disease. By means of this test, it has been possible to carry on epidemiologic investigations comparable to studies in diphtheria by the Schick test. It has been possible, for example, to establish the incidence of im-

munity in the general population, urban and rural, in the south and north. It has also been possible to show a close correspondence between the epidemiology of poliomyelitis and other contact diseases, particularly with diphtheria the epidemiology of which is well established. By this test we have recently established the mechanism through which this extensive immunization of the population may be accomplished; namely, as in diphtheria, through a subclinical route. We have shown that the immune substance is passively transmitted from mother to new-born precisely as in diphtheria and measles. The neutralization test has been of inestimable value in establishing the epidemiology of poliomyelitis on a sound footing and has helped to clear up many of its mysterious aspects.

From the first observation that the serum of recovered animals and patients had an inhibiting action on the virus, efforts have been made to establish the therapeutic value of convalescent serum. Although the literature is replete with favorable reports, and we in Massachusetts have used it for the past 5 years with apparently favorable results, its value is not yet established. Nowhere in the literature is there evidence that the serum was employed in a critically controlled experiment, i.e., the treatment of alternate cases diagnosed in the pre-paralytic stage. In a disease such as poliomyelitis where the outcome varies within such wide limits, and the incidence and extent of paralysis is unpredictable, nothing short of an alternate case experiment on an adequate series can be used as conclusive evidence of the value of any therapeutic agent. We have ample evidence that the serum is not of absolute value even when administered in large quantities in the earliest pre-paralytic stages. Whether or not it is of *any* benefit in treatment of the disease is as yet in doubt.

In spite of doubt concerning its value, efforts to obtain an adequate supply and diligent search for an animal source of a hyper-immune serum have continued. Our findings of a high rate of immunity in normal urban adults, whose serum, so far as is known, is equal in potency to convalescent serum, might vastly facilitate the matter of supply.

Recently Pettit's immune horse serum experiment has been revived by Fairbrother, and Fairbrother and Morgan abroad, and by Weyer, Park and Banzhaf in this country, and in the goat serum of Howitt another source of immune serum may be made available. Efforts have been made to test the relative potency of these serums. The effort to obtain a large supply of immune serum is perhaps premature when it is borne in mind that the fundamental question of whether or not immune serum works at all has not been settled.

Convalescent serum therapy, however, needs no apology. The serum has a definite inhibiting effect on the virus and from this experimental evidence alone it represents the most logical form of treatment. The results of the therapeutic use of immune serum in the monkey have not been encouraging. We have shown that the animal goes through a stage quite analogous to the pre-paralytic stage of the human disease, and if the serum is administered in large doses during what seems to correspond to this, there is no apparent interruption in the course of the disease. The animal goes on to paralysis and death as do the controls. Furthermore, when the cords of the animals are tested, they still contain active virus. It might appear from such experiments that convalescent serum would have no effect on the human disease; but such a conclusion does not necessarily follow, for the reason that the experimental disease in the monkey is a far more severe infection than that seen in man.

More hopeful results are obtained in protection experiments. Flexner and his coworkers, in 1910, were able to protect animals for 24 to 48 hours by the intraspinal administration of human convalescent serum. Rhoads has recently obtained protection from infecting doses for as long as 6 days by a similar procedure. Weyer, Park and Banzhaf report successful protection by intramuscular administration of immune horse serum, but since they used the somewhat uncertain nasal route of infection and no detailed protocols are given, it is difficult to determine if all the experiments were conducted in a parallel manner. Since intranasal instillation of virus does not uniformly result in disease, in any experiment employing this route of infection parallel and adequate numbers of control animals are essential. In our own experience with intranasal infection over a period of years, we have come to realize the uncertainties of this method. Although nearly all animals can ultimately be so infected it cannot always be accomplished by 1, 2 or 3 instillations; at times many may be needed before a "take" is effected. Whether this variation is entirely due to potency of virus or whether individual differences in susceptibility are factors is not known.

A number of attempts have been made to determine the relative strength of the serums available—human convalescent, adult human, and immune horse and goat. Here again one is treading on uncertain ground. The technic of the test as first employed by Flexner and Lewis is, with slight variations, that employed by most workers. This consists of mixing a varying amount of 5 per cent centrifuged suspension or filtered material with varying amounts of the serum to be tested. They are well mixed, incubated at 37° C. for 2 hours, and

kept overnight in the ice chest. An amount of the mixture sufficient to contain the usual infecting dose of virus is inoculated intracerebrally.

A number of factors have militated against refinements in the original technic. One of the chief difficulties is in establishing and working with a minimal infecting dose of virus. An average monkey cord weighing 7 or 8 gm. is soon used up so that it is not possible to carry on a long continued series of experiments with a single specimen of virus. The virulence may vary with individual cords, which necessitates often repeated expensive titration of individual cords.

While the results of a titration of an unknown serum may be comparable and valid for any single experiment, they may not be at all comparable with those of a similar experiment in which another specimen of virus or serum is employed. That such errors may and actually do arise is seen in the independent attempts at titration carried out by Shaughnessy, Harmon and Gordon in Chicago, and Weyer and Park in New York on human convalescent and human normal serums. The former authors found what they thought was a significantly higher titer of immune substance in the normal human serum over the convalescent, whereas Park and Weyer maintain that normal serum has only one-half the neutralizing power. The protocols of both groups seem fairly clear-cut and may be valid for the conditions and reagents used, but it is obvious that their results were not comparable, and therefore could not be used for purposes of generalization.

We have attempted to carry out such titrations from time to time in the past 6 years and as the number of tests grew it was realized that both the technic and reagents were much too uncertain and variable to permit of generalizations. Unfortunately neither the technic nor the reagents have reached the refinement which would allow such precision of titration as is possible, for example, in diphtheria toxin and antitoxin.

Successful experimental protection naturally raises the question of such protection in man. So far, the only convincing evidence of protection is observed when the serum is administered intraspinally (Flexner *et al.;* Rhoads). Whether intramuscular injections of immune serum give a passive immunity has not been proved.

Many attempts have been made actively to immunize the experimental animal. Because of the close analogies between the virus of poliomyelitis and that of rabies, attenuation of the poliomyelitis virus by drying was attempted a number of times. Landsteiner and Levaditi believed that they could immunize animals by the Pasteur technic, but others, notably Aycock and Kagan, found this method uncertain, a number of their animals coming down with the disease.

Other efforts have been made to attenuate the virus, some by heating for short periods of time (Abramson, Leiner and v. Wiesner, Landsteiner and Levaditi), or by exposure to the action of weak solutions of phenol. The results of these methods have been uncertain and hazardous—some animals were protected against subsequent infection, some failed to develop any protection, and others came down with the disease in the course of immunization. Aycock and Kagan found the safest and most constant results to be the multiple intracutaneous method, using an active virus. We have repeated these experiments many times, and recently Rhoads has successfully immunized animals by this route at a single sitting, injecting large amounts of virus over a large skin area.

Recent work with viruses indicates that they are not destroyed by the specific antiserum, but such serum acts as a neutralizer or inactivator, the phenomenon being similar to the neutralizing action of antitoxin on the toxin of diphtheria. It was found that this union could be severed by such simple procedures as dilution or filtration. For poliomyelitis virus the similar nature of the antiserum-virus combination was shown by Olitsky, Rhoads and Long, who were able to recover the virus in a potent form by cataphoresis from a neutralized mixture. The use of neutralized mixtures for the production of active immunity was first suggested by von Behring. Andrews, by employing neutralizing doses of virus and immune serum mixtures, was successful in producing immunity to vaccinia in rabbits; and Rhoads, by administering large doses of neutralizing mixtures of virus and immune serum intradermally, successfully vaccinated a certain number of monkeys against poliomyelitis (none of the animals, successfully vaccinated or not, showing any evidence of illness during the process). We have repeated these experiments, confirmed the results, and have developed a sufficiently high state of immunity to resist intracerebral inoculation of a large dose of a potent virus. Brodie and Goldbloom have reported successful immunization by a similar method.

Rhoads, utilizing the adsorption and inactivating properties of aluminium hydroxide, successfully immunized a series of animals by subcutaneous inoculations of the inactivated mixture. None of the animals showed any sign of illness throughout the vaccination. It appears, therefore, that we have available a safe, sure technic for the artificial production of immunity in experimental animals which may in time be developed into a suitable means for immunizing human beings. The advisability of such a procedure for universal immunization, in view of the low incidence of the disease, is problematical. Since the incidence of the disease, even in the worst outbreak, is seldom

over 1 or 2 per 1,000 population, any attempt to immunize against it would mean treating large numbers who would escape, in order to protect the few who would succumb. There is increasing evidence that physiologic differences in the host may be a large, or even a determining, factor in the outcome of an initial exposure to the infective agent. Too little is known concerning such physiologic alterations, and until more concrete data are obtained on this fundamental factor, it may be desirable to follow the orthodox procedure of active immunization if such a method can be safely applied. Although such a procedure might not be of general application during inter-epidemic years, it might be a useful weapon at the time of a severe outbreak.

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Basic Records for Use in a County Health Department*

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CERTAIN basic information is needed by a county health officer in order that he may organize his work intelligently and constructively, may handle emergencies as they arise, and evaluate results.

Suggested forms on which the necessary data may be recorded and summarized were submitted with the paper presented by the writer in Montreal. For convenience of arrangement the forms were grouped under the following headings:

A. Communicable Diseases and Communicable Disease Control
B. Prenatal and Maternal Care, Care of the Infant, the Preschool and the School Child
C. Births, Deaths and Causes of Death

It is necessary that the health officer use the United States Bureau of the Census populations of his state and county, by age, sex, color or race, for the background of record keeping. Summarized records of reported notifiable diseases, of births, deaths and causes of death for the state and each county should be supplied him monthly by the state bureau of vital statistics to check the correctness of his records and for comparison.

A description of the forms submitted follows:

A. Communicable Diseases and Communicable Disease Control:

1. Individual case card for the use of physicians. To be supplied in quantity to all physicians in general practice in the county, in order that they may report promptly to the health officer each case, or suspected case, of a notifiable disease attended, or brought to their attention.

2. Epidemiological record forms. Examples of forms for use in the investigation of diseases according to mode of transmission:

a. Naso-pharyngeal discharges

Example—Diphtheria—Card includes a clinical history of the case, a census of

* Abstract of paper read before the Vital Statistics Section of the American Public Health Association at the Sixtieth Annual Meeting at Montreal, Canada, September 14, 1931.

the household, extra-household associations, suspected or positive cases of diphtheria in associates, prophylaxis and general environment.

b. Excreta-borne

Example—Typhoid fever—Card includes a clinical history of the case, a census of the household, general environment, details of patient's exposure to possible sources of infection, sources of food and water supply.

c. Diseases of animals transmitted to man

Example—Undulant fever—Card includes a clinical history of the case, census of household, general environment, places and kind of work and dairy products used.

d. Insect-borne

Example—Typhus—Spotted fever—Card includes a clinical history and examination of the patient, exposure to rodents and insects, census of household, home and occupational environment.

3. Tuberculosis

a. Examination and clinic report—Card includes the family history, previous history, present illness, and physical examination.

b. Individual case record—Card includes information on contacts and notes of visits by public health nurse.

4. Notifiable diseases, cases and deaths by month of occurrence. Tabular record form.

5. Reports of individual physicians, by months and years. Tabular record form.

6. Spot map for indicating location of cases of notifiable diseases.

7. Immunization record forms for protection against diphtheria, scarlet fever, and typhoid fever. Card includes record of authorization.

B. Prenatal and Maternal Care, Health of the Infant, Preschool and School Child:

1. Maternal History—Card includes history of previous pregnancies, prenatal and obstetrical care, postnatal visits and condition on discharge.

2. Infant Record—Card includes history of living conditions, kinds of food taken, illnesses and records of examinations, corrections and immunizations.

3. Preschool and School Record

a. Individual record—Card includes past history, findings on examinations, corrections and immunizations.

b. Summary of defects found and corrections made in each school. Tabular record form.

C. Births, Deaths and Causes of Death:

1. Forms on which to make exact copies of original certificates of births and deaths. These should be filed in the office of the health officer.

2. Cross index cards for births. These are useful in large counties.

3. Tabular record of live births; by attendant, color and month; with totals for current and previous year.

4. Monthly tabular record of deaths from certain causes and classes of causes; by color and age groups.

5. Monthly tabular record of infant deaths under 1 year (exclusive of still-

births) from leading causes and classes of causes; by color, sex and age periods.

6. Monthly summary of maternal mortality; by causes, by color and month, with totals for current and previous year.

7. Departmental record of individual physicians and midwives; giving the number of births reported by years and months.

NOTE: Because of the cost of printing, reproductions of the forms are omitted from this article. Copies can be obtained from the author upon request.

Mental Hygiene and the Depression

WHAT is the depression doing to the nation's mental health? Has there been an increase in mental diseases that can be ascribed, directly or indirectly, to prevailing economic conditions? There is a general feeling that mental and nervous maladjustments are now more widespread than ever, due to the anxieties, insecurities, fears, the mental stress and strain that naturally spring from unemployment and economic distress. And there is the belief that the seeds of much future mental disorder are being sown during this period of social and economic dislocation and lowered morale. What are the facts?

. . . .

Inquiries made by mental hygiene agencies do not reveal a general rise in hospital admissions that can be readily interpreted in terms of the depression and there is perhaps little ground for pessimistic or alarming apprehensions in this connection. There is, rather, a feeling that the effects of the depression will not be apparent for some time to come—not until certain factors that usually enter into the precipitation of mental disorders have had time to operate. This is in accord with the understanding of modern psychiatry that mental diseases do not occur suddenly but develop gradually over shorter or longer periods of time.

"The present economic depression," Dr. Pratt states, "is taxing to the utmost man's adaptive possibilities and the difficulties of adjusting to new and painful situations find reflection in an interesting variety of community phenomena. Most, if not all, these phenomena are related to problems of human security. Every individual needs to develop a sense of security if he is to be an efficient community asset. This sense of security is an emotional state which permits one to attack the reality problems with which one is faced with a minimum of dislocated emotion. Such a feeling of security arises largely from the development of adequacies of skills and from a confidence in one's ability to deal capably with a variety of life situations."

To acquire this feeling of security, the announcement points out, man's personality as well as the environment in which he functions must contribute more to a feeling of security than to a feeling of insecurity. Among the most fundamental reality situations that threaten security it mentions those that menace the maintenance of life itself, as in war; great catastrophes; illness; and, for the present, the economic depression. Fear is the spectre that is taking the joy out of our lives at the present time. "Fear enters definitely into the whole picture—constructively at times, destructively at others. Fear becomes destructive when large masses of people are involved in distressing reality situations, such as unemployment and the necessary reduction in standards of living."—*Mental Hygiene Bull.*, 10, 1 (Jan.), 1932.

EDITORIAL SECTION

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PSITTACOSIS

A SEVERE outbreak of psittacosis came to our shores about 3 years ago as an unwelcome visitor. It was the object of many intense studies during which a number of laboratory infections with some deaths took place. We thought that it had been entirely eradicated, and possibly this was true. However, in December, 1931, and January, 1932, 12 cases occurred in the State of California, with 6 deaths. The cases were distributed over 7 counties, though 6 of them took place in 1 county. One fatal case was that of an inspector at the Port of Los Angeles, who had been boarding ships bringing birds from the Orient and the Tropics. His most likely exposure was to a number of parrakeets from one of these ships which he took to his home shortly before falling ill. As they had been destroyed when the facts became known, further investigation was impossible. One other case was due to a pair of parrakeets given as a Christmas gift. The birds appeared well, but laboratory examination proved that they were infected with psittacosis.

In addition, 3 cases, with 1 death, have occurred in New York City. The infection was traced in 1 case to a parrot which been put to board at a pet shop and became ill a few days after being taken home. Another case was an attendant at the same pet shop. It was shown that this shop had received a shipment of parrakeets from San Francisco in September. During October, 12 birds died, and some 40 were

sold. The others were sent to the Rockefeller Institute and psittacosis proved in several. One case has been reported from Oregon, due to parrakeets from California.

To date (March 15) there have been 22 cases in California, with 8 deaths. The situation is more serious than would appear from the number of cases. Importation of parrakeets might very well and fairly easily be stopped. However, certain sections of California provide ideal surroundings for the breeding and raising of these birds, and it has recently become quite an extensive industry there, in which some 3,000 poor people are concerned, in addition to about 1,500 dealers. If these breeding places in the state have become infected, the situation is complicated. So far the authorities have not been able to make a definite statement because dealers from whom infected birds have been obtained buy their stocks from various sources, and the birds are mixed. Circumstantial evidence points to importation of infected parrakeets. Needless to say, strict quarantine has been imposed both on importation into and exportation from the state, until it is certain that the disease has been eradicated. The state authorities can be depended upon to protect the people of California as well as the rest of the country.

THE DEPRESSION AND PUBLIC HEALTH

ONE of the most serious aspects of the depression is its effect on public health work. From all parts of the United States, as well as Europe, reports are coming in of curtailment of budgets, reduction in personnel, and limiting of projects, such as preventive campaigns against diphtheria, typhoid fever, etc. Many of our state boards are, as it were, living from hand to mouth, with only money enough to keep things going. Any aggressive work and excursion into new fields of prevention are out of the question. Publications are also hard hit, and there is little ground for optimism in sight.

It is futile to quote the great men of the past, statesmen, as well as scientists, to prove what health means to any nation. It required the World War to convince some of the foremost position which public health work should have in social organizations. In spite of this, it now looks as though another lesson is needed. Not that the governments of any state or country will deny the fundamental facts, but they do not seem to have that living faith which compels them to give to public health the position which it should rightfully have. We are not oblivious to the difficulties of the situation, but believe that it has been fully demonstrated in every part of the world that the "care of

the public health is the first duty of the statesman." Apart from physical and mental efficiency, which means good citizenship, there can be little doubt that the work of the Medical Section of the League of Nations has done more to bring about friendship between the nations and to promote peace than any other single agency.

The situation in this country is so serious that the Executive Board of our Association has felt compelled to call the attention of executives throughout the country to the dangers involved. There can be little doubt that the members of our Association, especially those engaged in active work of health administration, or in carrying out field projects, are keenly aware of the bad effects of curtailment of funds. Many of them are in positions to approach directly the appropriating bodies. Many others are not. It behooves our entire membership to exert all influence possible, direct or indirect, to give the public as well as appropriating bodies a clear understanding of what is involved. The following resolutions have been adopted and are being sent over the signature of the President to governors, mayors, Chambers of Commerce, and Federations of women's clubs throughout the United States.

Resolution of the Executive Board of the American Public Health Association, Monday, February 8, 1932, on the Present Emergency in the Administration of the Public Health Departments of the States, Counties and Cities of the United States

WHEREAS, the American Public Health Association is receiving from many sections of the country reports of contemplated or actual material curtailments of appropriations for personnel and facilities of public health service in states, counties and cities in response to the general effort towards reductions in governmental costs, and

WHEREAS, up to the present time, the health of the people has been year after year raised to higher levels, and maintained despite the unfavorable economic situation, this being in large part the direct result of the efficient health organizations that have been built up, and

WHEREAS, expenditures for the protection and promotion of the public health have heretofore been minimal, comparing poorly with expenditures for other public services of intrinsic merit, and, therefore, do not lend themselves to deflation without jeopardizing the health of the people, be it

RESOLVED by the Executive Board of the American Public Health Association, that every effort be made to maintain and even to advance the effectiveness of our health departments, and that the various agencies in the communities interested in the public health be asked to maintain unimpaired health budgets, trained personnel and services which have proved their worth in safeguarding the first wealth of every community—the health of its people.

For the Executive Board,

LOUIS I. DUBLIN, *President*

TRANSMISSION OF MOSQUITOES BY AIRPLANES

IT is an axiom that human disease travels no faster than means of human communication. With the increased speed of communication due to steamships versus sailing vessels, express trains, and most recent of all, airplanes, the spread of disease has become easier, and it is a trite saying that we are now in close touch with every part of the known world—a matter of days and hours, when formerly it was months and weeks.

The discussion of the transmission of disease by airplane by the Permanent Committee of the International Office of Public Hygiene, was mentioned in our columns.[1] It was again an object of discussion at the meeting in Paris, May, 1931. It was recognized that though the conditions existing in the various countries were widely diverse, the provisions adopted corresponded to the general needs essential to sanitary defense and were a guarantee against any arbitrary action concerning international air relations, though that would not exclude legitimate intervention in times of immediate danger. The danger of infected people traveling by airplane has been lessened by detention and observation before embarkation, but there still remains the possibility of carrying infected insects, particularly mosquitoes. We are in close communication with the West Indies, the west coast of South America, Central America, Cuba, Panama, Mexico, and Jamaica, and there are three regular lines, daily and triweekly, between Miami, Fla., and the countries to the south of us, some of which were formerly heavily infected with yellow fever, and practically all of which harbor the yellow fever mosquito.

In view of the present situation and the certainty of increased airplane traffic in the future, officers of the U. S. Public Health Service have carried out a series of experiments on the transmission of mosquitoes by airplane.[2] From September 12 to September 18, 1931, more than a hundred inspections of planes from the southern countries were made on arrival at Miami. Twenty-nine mosquitoes were captured, the majority of which were non-disease-bearing, though several times *Aedes aegypti* were found, and once an Anopheles, showing that under natural conditions mosquitoes are carried considerable distances in planes.

To study the matter further, captured mosquitoes were stained with eosin and released in planes just before leaving.[3] Of 40 mosquitoes, nearly all *Aedes aegypti,* released in the cabin of a Fokker at San Juan, 13 were recovered in Miami, the distance traveled being 1,250 miles and time 9 hours and 53 minutes. In a second experiment, of 30 stained mosquitoes, 3 were captured on arrival at Miami,

and one was active during the trip, biting the radio operator when at an elevation of 3,000 feet. In a third experiment the pilot was bitten while in flight, and 6 mosquitoes were recovered at Miami. Altogether, in 3 experiments some 100 stained mosquitoes were released in the cabins of airplanes, and 22 of these were recovered in Miami, the distance traveled being 1,250 miles and the average time of the trip 10 hours and 10 minutes. There can therefore be no doubt of the potential danger of the carrying of infected mosquitoes by airplanes. However, planes may be freed from mosquitoes at points of departure by simple spraying, and the writers of the article quoted believe that there is no obstacle to the efficient treatment of airplanes for the destruction of mosquitoes and thus avoid the retardation of air traffic.

REFERENCES

1. The Airplane and Yellow Fever (editorial), *A. J. P. H.*, 20, 11: 1221 (Nov.), 1930.
2. *Pub. Health Rep.*, Nov. 20, 1931.
3. *Pub. Health Rep.*, Nov. 13, 1931.

Sixty-first Annual Meeting of the A. P. H. A.
Washington, D. C., October 24–27, 1932
Headquarters, Willard Hotel

ASSOCIATION NEWS

NEW MEMBERS

The following list includes applicants who have been approved for membership in the A. P. H. A. by the Sub-Committee on Eligibility. These new members have requested affiliation with the sections indicated, and action by the Section Council will follow.

Health Officers' Section

Hainan C. Busby, M.D., Columbia, Tenn., Director, Maury County Health Unit

Edwin H. Coachman, M.D., Court House, Muskogee, Okla., Superintendent of Health, Muskogee County

Robert S. Cowles, M.D., Greeneville, Tenn., Greene County Health Officer

Robert B. Griffin, M.D., Ripley, Tenn., Lauderdale County Health Officer

D. Dick Howser, M.D., Fayetteville, Tenn., Director, Lincoln County Health Unit

William W. King, M.D., Elizabethton, Tenn., Director, Carter County Health Unit

Charles L. Low, M.D., Bellport, N. Y., Deputy Commissioner of Health, Suffolk County Department of Health

Charles W. MacMillan, M.D., Health Centre, 134 Sydney St., St. John, N. B., District Medical Health Officer

Edward L. Merritt, M.D., 130 Rock St., Fall River, Mass., A. A. Surgeon, U. S. Public Health Service

John Y. O'Daniel, M.D., Dayton, Tenn., Director, County Health Unit

Juan Arruza Perez, M.D., Box 90, San Juan, P. R., Head of Public Health Unit at Guayama

Frank L. Roberts, M.D., Trenton, Tenn., Health Officer

William C. Sanford, M.D., Cleveland, Tenn., Director, Bradley County Health Unit

Floyd P. Smith, M.D., Trenton, Tenn., Assistant Health Officer, Gibson County

Cecil B. Tucker, M.D., Knoxville, Tenn., Epidemiologist, City Health Department

James B. White, M.D., Crossville, Tenn., Director, Health District No. 5

Robert B. Wolford, M.D., 1300 7th St., Wichita Falls, Tex., City Health Officer

M. V. Ziegler, M.D., State Board of Health, Raleigh, N. C., Surgeon, U. S. Public Health Service

Laboratory Section

Thelma M. DeCapito, University of New Mexico, Albuquerque, N. M., Bacteriologist, State Public Health Laboratory

Vera E. Lautenschlager, Box 709, Reno, Nev., Acting Director, State Hygienic Laboratory

Vital Statistics Section

Carolina R. Randolph, State Health Department, Nashville, Tenn., Technical Assistant

Robert H. White, Ph.D., 2211 Highland Ave., Nashville, Tenn., Associate Statistician, State Department of Health

Public Health Engineering Section

James T. Anderson, Humphreys County Health Unit, Waverly, Tenn., Sanitary Inspector

B. G. Barfield, 2216 Murphy Ave., Nashville, Tenn., Field Assistant in Sanitation, State Health Department

James W. Barnes, Greene County Health Department, Greeneville, Tenn., Sanitary Inspector

T. B. Link, Maury County Health Unit, Columbia, Tenn., Sanitary Inspector

Ray G. Nebelung, Charlevoix, Mich., Sanitary Inspector, Department of Health

Charles D. Pearson, Shanghai Waterworks Co., Ltd., Shanghai, China (Assoc.)

Grover C. Reid, Gibson County Health Dept., Trenton, Tenn., Sanitary Officer

P. R. York, Lincoln County Health Unit, Fayetteville, Tenn., Sanitary Inspector

Industrial Hygiene Section

Henry S. Brown, M.D., 9101 Hamilton Ave., Detroit, Mich., Medical Director, Michigan Bell Telephone Company

Public Health Nursing Section

Olive H. Anderson, Blountville, Tenn., Staff Nurse, Sullivan County Health Department

Kate B. Britt, R.N., Rutherford County Health Department, Murfreesboro, Tenn., Staff Nurse

Julia V. Cochran, 613 Radcliffe Ave., Pacific Palisades, Calif., Public Health work in schools of Santa Monica

Myrtle Dye, R.N., Rutherford County Health Department, Murfreesboro, Tenn., Staff Nurse

Elvie M. Hopton, R.N., Shelby County Health

Department, Memphis, Tenn., Staff Nurse
Malvina G. Nisbet, R.N., State Health Department, Nashville, Tenn., State Supervisor of Nurses
Dorothy Peacock, R.N., State Department of Health, Nashville, Tenn., Staff Nurse
Elisabeth M. Phelps, R.N., 2101 20 Avenue, S., Nashville, Tenn., Supervisor of Nurses, Davidson County Health Department
Julia R. Robertson, R.N., Monroe County Health Unit, Madisonville, Tenn., Staff Nurse
Hattie Shoemaker, R.N., Kingston, Tenn., Roane County Nurse

Unaffiliated

Manning Elovzin, M.D., 8356 Cloverlawn, Detroit, Mich., Student (Assoc.)
Ernest G. Smith, State Department of Health, Nashville, Tenn., Dental Clinician
Hyman I. Spector, M.D., 35 Municipal Court Bldg., St. Louis, Mo., Tuberculosis Controller
Ruth C. Warwick, M.D., Westmoreland Depot, N. H., Health Officer

DECEASED MEMBERS

John J. Griffin, M.D., Sault St. Marie, Mich., Elected Member 1916, Fellow 1922
W. H. Hattie, M.D., Halifax, N. S., Elected Member 1913, Fellow 1922
F. D. Bell, Montclair, N. J., Elected Member 1907
Robert W. De Forest, New York, N. Y., Elected Member 1912
Alfred Seale, Palo Alto, Calif., Elected Member 1930
Arthur C. Selmon, M.D., Battle Creek, Mich., Elected Member 1931
William F. Williams, M.D., Bristol, R. I., Elected Member 1920
Arlington Pond, M.D., Cebu, P. I., Elected Member 1915, Fellow 1923
Trent Stout, M.D., Pierre, S. D., Elected Member 1929

LETTER FROM GREAT BRITAIN

CONGRESS OF THE ROYAL SANITARY INSTITUTE

THE invitations to local health authorities and other bodies to appoint delegates to attend the annual congress of the Royal Sanitary Institute, at Brighton from July 9 to 16, have now been issued, and the effect on the attendance that may result from the present stringency is causing some anxiety in certain minds. Almost invariably it is the practice of authorities sending representatives to make themselves responsible for the payment of expenses, and in places where accounts are subject to government audit, the payments are permitted, provided the Minister of Health agrees.

In ordinary years the Minister permits the Institute to announce, in the invitation to attend, that he is prepared to approve the expenditure of one or two delegates, and at the audit no further evidence of approval than this is required. On the present occasion, permission to appoint delegates and pay their expenses has not been given generally, but must be sought by each authority individually and must be supported by reasons for desiring to make the appointment.

From the form of the wording of a letter on the subject from the Ministry it is believed that permission is not likely to be withheld in any case, and that the Minister and his department generally are as anxious as health authorities and their officers to insure the success of the meeting, and that as many as possible of those engaged in health work shall have the opportunity of getting together and discussing health problems and the effect upon them of present conditions.

Brighton, the venue of the meeting, is a famous health resort and a great convention center. The local council is one of the most progressive health authorities in the country, and for this, among other reasons, will be seriously

disappointed if the meeting is not a magnificent success, attracting delegates not only from Great Britain but from overseas and from other countries. The average attendance at the congresses is about 1,400 or 1,500, and the Council of the Institute naturally hope that this figure, at any rate, will be reached. As President of the Institute, that body has recently elected Lord Balfour of Burleigh, who has devoted great attention to municipal government on the public health side particularly. The family name of Lord Balfour, it may be of interest to note, is Bruce, and he claims descent from Robert the Bruce, the Scottish monarch, whose observations on the habits of the spider are still quoted with approval in books treating of the history of Scotland.

SALARY CUTS IN THE HEALTH SERVICE

The possibility exists, of course, that some authorities may refuse to send representatives to the congress in order to use it as one of the means of securing some part of economy to be credited to the works done in relation to public health. The amount would, naturally, be trivial but speaking generally the economies that can be made in health expenditure cannot amount to much. They are, indeed, so small as to be hardly worth troubling about, more particularly as the effects they produce are out of all proportion to the money saved.

This, as a fact, is true of many of the economies suggested or adopted by local government bodies. Particularly is it true of the salary cut method. This, which was recommended as a gesture by the Ministry of Health, appealed very strongly to a number of authorities, who saw that it was put into operation almost immediately. At present about half the areas in the country are affected. In the places in which it is not in operation those who favor it urge its adoption in the face of evidence that the deductions made are totally inadequate to bring benefit to anybody or to do more than cause irritation and inconvenience and hardship to those who must suffer them. So far as the public health service is concerned —or certain sections of it, anyhow, the medical officer of health and the sanitary inspector in particular—the position is peculiar. Having security of tenure these officers can only have their salary reduced if they consent. If they refuse they are at liberty to resign. They may not be discharged without good cause and subject to the consent of the Minister of Health. No difficulties have arisen over discharges up to the present and it is doubtful if they will, since no authority probably will take the risk of discharging a health officer for failing to offer or refusing to accept a salary cut, much as some of them would like to do so.

LONDON AND ITS FOGS

Though at the back of his mind he appreciates the seriousness of fogs from the health and economic point of view, the Londoner is always ready to jest about them and to laugh at rather than resent the action of the American film producer who, when he must show London, inclines to represent it in a state of more or less complete darkness.

One of the reasons why the Londoner has laughed, recently at any rate, has been because of a conviction that things have been improving to such an extent that presently the "London particular" would be a thing of the past. How wrong he has been and how justified the film producer, is shown in the report of the Department of Science and Industrial Research on observations made during the year ended March 31, 1931, in connection with the investigation of atmospheric pollution that has been going on for the last 17 or 18 years. The observations upon which the report is based were carried out in a

large number of centers throughout the country, and in practically every instance the results show that considerable improvement has taken place, the amount of impurity deposited being greatly reduced.

From the records it does not appear that London has shared at all in the general improvement. The unfortunate Londoner, indeed, is warned that from all appearances "as regards impurity suspended in the atmosphere, it seems probable that London may have to put up with black fogs for many years to come." And to make matters worse, he is told by the reporters that they cannot understand where "the general optimistic belief in the reduction of smoke fogs" has come from.

Even after such knock-down blows it is improbable that the Londoner will abandon his optimism. In spite of his coughing ("Britons," said the American writer, "never, never shall be slaves—except to their catarrh"), and in spite of investigators, he will aver that there are fewer fogs and they are nothing like what they were when he was a boy. "And in any case," he will add, "there is always May; and in London in May, fogs are soon forgotten."

DR. PARLANE KINLOCH, SCOTTISH DEPARTMENT OF HEALTH

By the death of Dr. Parlane Kinloch, Principal Medical Officer of the Scottish Department of Health, preventive medicine over a much wider area than Scotland has suffered a very serious loss. It is all the more serious because at the time of his death he was only 46 years of age, and was definitely in process of establishing himself as one of the outstanding figures of his decade.

The great bulk of his work had been done in Aberdeen, and it was because it showed so much of initiative, originality and enterprise that when the time came to appoint a successor to Sir Leslie Mackenzie, those responsible wasted no time in looking beyond Kinloch. As the health worker must be, he was very much of an idealist, but in his idealism there was a wide streak of the practical which showed particularly in the scheme that he had formulated and that he saw adopted, to an extent, of amalgamating all the health activities of an area and so getting rid of overlappings liable to lead to friction.

It had been hoped that he would have been able to form part of the delegation of British health officers at the Montreal meeting of the American Public Health Association, but greatly to his regret he had to refuse the invitation. This was very unfortunate, since though he was not counted an attractive speaker, he had a great sincerity and chose always subjects that were original, interesting, and stimulating.

London CHARLES PORTER, M.D.

PUBLIC HEALTH ADMINISTRATION

FIVE YEARS AT BELLEVUE–YORKVILLE

AN EXPERIMENT IN HEALTH CENTER ADMINISTRATION

SAVEL ZIMAND

Administrative Director, Bellevue-Yorkville Health Demonstration, New York, N. Y.

THE Bellevue-Yorkville Health Demonstration, under the leadership of Shirley W. Wynne, Health Commissioner of New York City, completed 5 full years of active operation at the close of 1931.* During this 5-year period under the leadership of the Department of Health and in coöperation with various official and private agencies, the Demonstration, financed by the Milbank Memorial Fund, has combined an experiment in metropolitan health administrative practices with service for the people of the district at the Bellevue-Yorkville Health Center, and the experience there has been an important factor in the formation of plans to erect other health centers, until every district in the city shall have its center. In addition, many specific services, experimentally inaugurated by the Department of Health with the aid of the Demonstration, have since been installed elsewhere in New York, while others are incorporated in the health program of the city.

Thus certain preventive and diagnostic medical services now regarded as indispensable in the maintenance of a standard of community health had their preliminary trial in Bellevue-Yorkville in the course of these 5 years. The department's first clinic for preschool children was opened at the Health Center in 1927; since that time two have been established in other districts, and last year two others were opened in the Demonstration area. The school children's clinic and the city-wide diagnostic cardiac clinic for children applying for permits to work (the latter with the assistance of the New York Tuberculosis and Health Association), both at the Health Center, are the first of their kind to be carried on under the auspices of the department. The electrocardiogram for the cardiac clinic was purchased by the Demonstration. The department's first complete mental hygiene unit was established in November, 1930, at the center.

The first Department of Health consultation chest service for private physicians was set up in 1929 at the Health Center; the department now operates five others in various districts of the city. X-ray equipment for chest examination was installed here by the Demonstration and subsequently has been incorporated by the Department of Health in its tuberculosis clinics elsewhere in the city. A pneumothorax refill service, established experimentally at the Health Center in 1931, is the

* Since its inception, Dr. Wynne has participated actively in the work of the Demonstration, and its most important and successful projects have been started at his initiative and suggestion. Dr. Wynne is now, and has been for the past 3½ years, chairman of the governing boards of the Demonstration, and before that time was its vice-chairman.

District by the Demonstration in co- vance in child hygiene made in the dis-

first department service of its kind. The extension of this service to other parts of the city is contemplated. The services of a tuberculosis consultant, and of a nose and throat specialist, as well as other medical and clerical staff and equipment, were added by the Demonstration to the clinical services of the department.

Another important contribution of the Demonstration is the assistance given to the department's nursing service. Additional field nurses for the district and clerical help for the nursing service were supplied by the Demonstration in order to provide a more adequate staff, and these gradually have been replaced by the department's Bureau of Nursing. In 1928, 10 additional department field nurses were on the Demonstration's payroll; in 1929 there were 5; in 1930, 3 or 4; and by April, 1931, all had been replaced by the department.

Consultants have been retained from time to time to give advice and assistance in their specialties to the nurses and in the clinics. In addition to those serving in 1931 in the fields of mental hygiene, nutrition, and social service, a recreation consultant, from 1927 to the spring of 1930, assisted in developing play facilities in the district and stimulated interest in outdoor activities among adults as well as children.

Important assistance was given by the Demonstration to the Department of Health in the development of its Bureau of Nursing. Early in 1928, when this was created as a separate bureau, the assistant executive officer of the Demonstration became director of the bureau. The Demonstration later provided, for a limited time, 4 special supervisors. Two of these helped prepare a manual and an educational program for the nurses, a third helped reorganize the system of records, and the fourth was assigned to an experiment in the Bellevue-Yorkville District. This was the introduction of the generalized system, first applied to nurses of the Yorkville unit in 1929, and then to the Bellevue group, which the Bureau of Nursing now plans to extend to other districts.

An interesting and largely successful experiment in health education in the schools was carried on in coöperation with the Board of Education and the Catholic School Board from 1927 to 1930. One consultant was named for the public schools of the area, another for the parochial schools, and a third served 1 year in a junior high school. Their purpose was to help develop a more complete health education program, and much that was introduced during that period became integral to the program, not only of schools in Bellevue-Yorkville, but of those in the city as a whole. Reports describing these projects are soon to be published.

Health education, applying not exclusively to the school population, but to adults working or living in the district, as well as children, has been directed toward securing desirable changes in public opinion, attitudes, and habits on questions of preventive medicine and public health. Perhaps never before in New York City has such intensive, continuous, and widespread health education work been conducted in a district of 150,000 people. Through picture newspapers, through artistic posters for store windows, schools, and social agencies, through special pamphlets and leaflets, circular letters, motion pictures and open forum meetings, vigorous campaigns were conducted on various aspects of public health—child hygiene in general, vaccination against smallpox, immunization against diphtheria, early discovery of tuberculosis and other preventable diseases, correction of dental and other physical defects. One of the first intensive periodic health examination campaigns in New York City was carried on in the Bellevue-Yorkville

District by the Demonstration in cooperation with the medical profession. Two large-scale campaigns conducted on a demonstration basis dealt with venereal diseases and safety. They overstretched local boundaries in interest, having been the subject of wide newspaper and magazine comment.

The health education work of the Demonstration has had the threefold effect of arousing interest in measures to conserve health, of inducing persons to use the services of private physicians or clinics, and of interesting health and welfare agencies of the district, and in some cases outside its boundaries, to do similar work.

Although this brief summary does not aim to measure statistically the results of the activities carried on by the Demonstration, nevertheless some statistical indications may be recorded. However, it is important to recall that the health work in Bellevue-Yorkville has been carried on in coöperation with a number of official and unofficial agencies, and all of these have had an important part in whatever gains the statistics may show.

A concrete result of the continuous emphasis in the health education program on the need for toxoid inoculation is illustrated by a reduction in the death and case rate of diphtheria. The diphtheria death rate for the district averaged 14.2 per 100,000 during the 5-year period 1922–1926 prior to the opening of the Demonstration, and it was reduced to 8.2 for the 5-year period 1927–1931. The case rate was reduced from 197.3 to 169.5. Even allowing for the cyclical changes of the disease, the case and death rate of diphtheria is below what might be expected. It is striking to note that from August, 1929, to March, 1931, there was not a single death from diphtheria in the district.

Another important contribution to the future health of the city is the advance in child hygiene made in the district in the past 5 years. Through the efforts of a competent and informed nursing service, and as a result of systematic health education, a considerable proportion of the infant population is under observation either by private physicians or in the baby health stations. Approximately 50 per cent of the babies born in the area during 1931 were registered in the three baby health stations. Consultation of private physicians was, of course, persistently urged in every connection.

The infant mortality rate in Bellevue-Yorkville averaged 93 per 1,000 births during the 5-year period prior to the opening of the Demonstration, and was reduced to 86 in the period 1927–1931. The last 3 years have shown a marked decrease, and the rate for 1929–1931 was only 79. The tuberculosis death rate in Bellevue-Yorkville was reduced from 148 per 100,000 during the period 1922–1926 to 116 in the period 1927–1931; while the rate in Manhattan was reduced from an average of 130 in the years 1922–1926 to 123 in the years 1927–1931, and in New York City as a whole from 94 to 74.

During the same period (1922–1926 and 1927–1931) improvements also took place in Bellevue-Yorkville in the death rates of typhoid fever (from 4 to 1 per 100,000), measles (from 17 to 2), scarlet fever (from 3 to 1), whooping cough (from 7 to 3), diarrhea and enteritis (from 40 to 26), and pneumonia (from 212 to 210). The only death rates in this period which show an increase in Bellevue-Yorkville are those of the so-called degenerative diseases (cancer, cerebral hemorrhage and diseases of arteries, and heart disease) and from accidental causes.

But it should be pointed out that the population of the district is so fluctuating not only in numbers, but in its very character, and the influences affecting the death rate and the prevalence of

disease are so powerful and far-reaching, that without far more detailed information than we have at present, and more careful study, it would be impossible to test the usefulness of the work by means of statistics alone.

Two research studies of major importance have been made by the Demonstration. The first was a comparative and clinical investigation of vulvovaginitis, undertaken to provide a basis for advising a practical method of diagnosing gonorrheal vaginitis and to determine the relative efficacy of the several methods of treatment. It was done with the assistance of the Willard Parker Hospital. Begun in 1927, and concluded in 1930, this study is summarized in a report soon to be published, giving a description of clinical procedure and an account of bacteriological work. The report includes the social facts as well as the medical histories of the 322 patients from all parts of the city who were observed.

A study of tuberculosis in 1,000 school children of 13 and 14 years was carried on in 1930. This, it is felt, added to the available information regarding diagnosis and prevalence of this disease in the age group studied and served as a trial of methods which might prove practical in other parts of the city.

The dental service at the center maintained, since 1927, jointly by the Tuberculosis Committee of the Association for Improving the Condition of the Poor, and the Demonstration, has carried on both a clinical and an educational program. The efforts of the service were combined with those of the schools, dental societies, and other community agencies. The educational part of this work cannot be measured statistically, but the following figures give some indication of what has been accomplished in the clinic. In the 5 years from its establishment in 1927 to the end of 1931, the number of patients treated (nearly all school children) was 11,502. The total number of operations performed was 68,108, an average of 5.9 per patient.

Of recognized value too is the quarterly and yearly compilation, prepared by the Demonstration's division of records, of vital statistics for the 25 sanitary areas comprising its district. A record of the prevalence of diseases, so localized, has made possible greater efficiency in the direction of preventive activities by the Health Center. The Committee on Neighborhood Health Development of the Department of Health, in preparing data for city-wide activities, has been guided to a great extent by the practical experience in Bellevue-Yorkville.

After due trial, certain experiments were discontinued as impracticable on a city-wide scale, or for various specific reasons. An evening Department of Health venereal disease clinic, established in 1927 and closed in 1929, gave 1,703 treatments to 384 patients. The expenditure for the equipment and social service was provided by the Demonstration. Intended primarily as a diagnostic service for physicians, this was, as a matter of fact, sought less for that purpose than for treatment. During 1928 and part of the following year, the Demonstration provided clerical and social service assistance to three venereal disease clinics in the Bellevue-Yorkville District. This was apparently a real help in improving their records and routine and in demonstrating to those directly responsible the need for additional facilities and staff.

For a trial period of 6 months in 1930, office nurses were provided free of charge to give part-time service to private physicians. After the experimental period, those who wished to continue were to pay for the service. To facilitate the private practice of preventive medicine, an arrangement was made in the same year whereby the Demon-

stration met the expense of laboratory tests, such as were not already provided free by the Department of Health, needed by patients unable to pay the usual fees. While both of these trial services awakened real interest, this was not thought to be wide enough to warrant continuing them. A graduate course in the technic of making general health examinations was given for physicians of the district for several terms in 1928 and 1929, but it was not continued thereafter, for it proved to be an expensive method of providing a limited amount of instruction.

Throughout this period, the Bellevue-Yorkville Health Demonstration has been most fortunate in the coöperation it has enjoyed from official and unofficial agencies, especially the Departments of Health, Education, and Police, the Catholic School Board, the churches, voluntary health and welfare organizations, dentists and dental societies, and the medical profession. In all its major efforts this coöperation has been a very important factor. Private physicians in the district have worked with the Health Center in many important projects, and physicians elsewhere in the city have given valued support. Since the opening of the Demonstration, the president of the County Medical Society has served on the Community Health Council.

While new aims have developed in the course of 5 years, the original aims have in the main controlled the program of the Health Demonstration. Known facts about the prevention of disease have been applied to a given area, with the implication that a test of the success of the health program is that it must be applicable to the city as a whole and to other urban areas. At the same time, some services of the Demonstration have overstepped the boundaries of the area, and new city-wide services have been added.

The number of new patients registered, and the total number of visits these patients made to the various clinics in the past 5 years, indicate roughly the extent and range of medical services performed. It is important to consider the total attendance, since most patients made repeated visits for reëxamination, or immunization, or for advice and consultation. Since 1927, the three baby health stations now functioning, and a fourth which operated only during 1927 and 1928, have enrolled 4,670 new patients, and had a total attendance of 94,507; the preschool clinic established the end of 1927 and the two added in the summer of 1931 enrolled 1,687 children, and had a total attendance of 10,235; and the school children's clinic, since its organization in 1928, has had 1,273 boys and girls upon its register with a total attendance of 2,984.

In the tuberculosis service, the Yorkville district chest clinic for adults and children has examined 4,614 new patients in 5 years, and had a total attendance of 13,634, a large percentage of which were reëxaminations, while the consultation chest service for private physicians has examined 3,294 new patients in the 3 years of its existence, with a total attendance of 4,807. It should be added that every effort has been made to bring in the tuberculosis contact cases, and as a result 78 per cent of the contacts were examined in the years 1930 and 1931.

The consultation chest service for private physicians is designed for those who can afford to pay the fee of their physician but who are unable to meet the cost of X-ray diagnosis and a specialist's examination. Complete findings and an opinion on the case are forwarded to the patient's physician, and no information or advice is given directly to the patient. At the Yorkville district chest clinic, the patient applies directly for diagnosis, advice, and placement. The attending medical service of the clinic has been so reor-

ganized that the patient can always have the same physician and be looked after by the same nurse. It is felt that this method has strengthened the contact between patient and doctor. The children's service of the Yorkville district chest clinic was reorganized in October, 1930, and has proved an important source of discovering new cases needing attention.

Well babies are admitted for examination, immunization, and advice to one or another of the Department of Health baby stations located in the district. At the preschool clinics the same procedure is followed. Correction of physical defects before children are old enough to enter school is encouraged, and arrangements for attending to this may be made with special clinics. Children of school age who require more complete or more detailed physical examination than can be given by school examiners are admitted for diagnosis and observation to the children's clinic, located at the Health Center, especially designed for this purpose. Thus the work of the Department of Health doctors in the schools is supplemented, and the clinic also serves as a clearing house for referring certain children to the special clinics.

At the cardiac diagnostic clinic, which was started as a result of the work of the Cardiac Committee of the New York Tuberculosis and Health Association, a thorough examination is given to every child suspected of having a cardiac condition, among those applying for working papers. The cardiac study includes an electro-cardiogram, teleo-roentgenogram, urinalysis, and complete physical examination. As a result of the work of this clinic, some children were prevented from taking up work which would have been harmful to their health, while others were relieved of the fear of cardiac conditions and sent back to normal occupations. The objectives of the mental hygiene unit are to carry out among the Bellevue-Yorkville Department of Health nurses an educational mental hygiene program, and to be of service to patients referred by them or by doctors in the various clinics of the department. An important contribution of this service is the progress that has been obtained in working with and through the Department of Health nurses and the medical members of the various clinics.

Such in the main have been the activities of the Demonstration during the past 5 years.* Some of the achievements can be measured in black and white figures. But there are other more intangible aspirations to which it clings. Who, for example, is able to measure statistically the value of an opportunity for health, with its resultant opportunity for happiness? In seeking to bring this health opportunity within the reach of the less fortunate in the broad and varied territory of the Bellevue-Yorkville District, the Demonstration opens ever widening vistas. Nor are the effects of these activities confined entirely to the district. As pointed out above, some of the work has borne fruit throughout the city, and the ultimate influence of these efforts may be far greater than we at present can conceive.

* The years 1922, 1923, and 1924, the so-called prenatal period of the Demonstration, were given over largely to studies on which the choice of a location and the general plan of organization were based. The years 1925 and 1926, the organization years, were spent largely in making further statistical studies of conditions in the district, planning programs, remodeling and furnishing the Health Center, which was opened on August 31, 1926, etc. The population of the district, which extends from 14th to 64th Street on the east side of Manhattan, with Fourth Avenue as the western boundary below 42d Street and Sixth Avenue above, was reduced from 175,000 in 1925 to about 146,000 in 1931.

Madison, Wis.—This city with a population of 57,899 in 1930 operated on a health department budget of $34,598, exclusive of hospitalization. A general death rate of 8.8, a birth rate of 19.3, and an infant mortality rate of 44.8 are noted. Of 41 cases of diphtheria reported, only 2 were considered as chargeable to the city, as 28 were non-residents and 11 occurred among nurses and employees of the hospital in which the majority of non-resident cases were treated. No diphtheria occurred among nurses or employees of the quarantine hospital. There were 8 cases of typhoid fever, 5 in one family, all non-residents, who were brought to the hospital for treatment.

The Board of Health maintains an eye, ear, nose, and throat clinic, to examine, advise, and correct defects among school children. The children who are sent to the clinic have had a preliminary vision test by their teacher and a public health nurse. If a child is found to have defects, a notice is sent to the parent with advice regarding correction. The indigent cases are returned to the clinic for complete examination and treatment. Glasses are furnished if necessary, and operations for removal of tonsils and adenoids are performed at the hospital at the expense of the Board of Health.—*Annual Report*, Madison Board of Health, 1930.

Vital Statistics for Montreal, Canada, 1930—The annual report of the Montreal Department of Health for 1930 maintains the standard of excellence set by the department in its annual reports, which present a clear statement of health conditions in Montreal and the activities of the department.

It is interesting to note that the estimates of population made by the department are confirmed by this year's census figures. The birth-rate of 26 is below the average, which was 31 for the past 10 years. The same is true of marriages, which were 8.4 per 1,000, as compared with an average of 9.4 for the preceding 10 years.

The general death rate of 12.9 per 1,000, shown in this report, is the lowest rate experienced by Montreal. It represents a decided gain over the rate of 15.2, the average of the past 10 years. An infant mortality rate of 124 is high, but it is low as compared with the records of past years. Diarrhea and enteritis are responsible for one-third of these deaths, and this indicates the need for more instruction in infant care. The mortality from tuberculosis continues to decline from a ten-year average of 143 deaths per 100,000 to 124 in 1930.

The rates vary considerably for the different races making up the population of Montreal. The French-Canadian birth rate is 31.9, and their infant mortality rate, 136. The British-Canadian rates are 17.8 and 78 respectively.

Deaths from cancer and organic disease of the heart are increasing; deaths from pneumonia and broncho-pneumonia are decreasing. The cancer rate for the first time went over 100, being 102; the average for the past 10 years was 84.—*Canad. M. A. J.*, 25: 755 (Dec.), 1931.

LABORATORY

THE ISOLATION OF AN ORGANISM OF THE ABORTUS-MELITENSIS GROUP FROM A BLOOD CLOT, THE SERUM OF WHICH FAILED TO GIVE AGGLUTINATION WITH *B. ABORTUS* *

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AN organism of the abortus-melitensis group was isolated from a specimen of clotted blood submitted to the laboratory 3 weeks after the onset of illness. No agglutination of *B. abortus* was obtained either in this specimen or in one examined 2 weeks later. No agglutination of *B. typhosus*, *B. paratyphosus* A, or *B. paratyphosus* B was obtained. The clot was cultured in a bottle of liver-infusion broth which was stoppered with a rubber stopper and incubated at 37° C. for 1 week.

Subcultures were made on liver-infusion agar at the end of this time and incubated in a closed jar in which approximately 10 per cent of the air had been replaced by carbon dioxide.

After 1 week's incubation, colonies of organisms belonging to the abortus-melitensis group had developed.

Suspensions of the growth were agglutinated in a 1:2,500 dilution of immune serum prepared with *B. abortus*. The organisms were not agglutinated in the patient's serum.

The patient, a housewife of 45 years, became ill on April 1, 1930, with a pain in the chest, headache, vomiting, shortness of breath and fever varying from 100° to 103°. Remissions of temperature occurred every day at noon and lasted for 4 hours. In April, 1928 (two years before), the patient had been ill for 18 weeks with exactly the same symptoms.

There was no history of contact with goats, cows, or swine, but the patient had consumed raw cow's milk from a herd in which abortions had occurred.

* *J. Lab. & Clin. Med.*, Jan., 17: 345-346, 1932.

A MODIFICATION OF THE FILDES ANAEROBIC JAR

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MC INTOSH and Fildes[1] published specifications and directions in 1916 for the operation of an anaerobic jar utilizing the palladium capsule for combining hydrogen and oxygen. Fildes[2] further improved the method in 1921. In the same year Brown[3] published further modifications of the Fildes jar.

All three papers specified the use of a glass museum jar covered by a metal top. The modification here presented is the same in all fundamentals as in the methods of Brown and Fildes with

three exceptions—the construction of the jar, the resistance unit, and the gasket seat. For early experiments the writer used the method as advised by Fildes, that is, glass jar, metal top with platinum coil suspended below, and light bulb resistance. During the 21st run, the apparatus exploded and was completely demolished. This experience was sufficient to cause the writer to have a metal jar constructed to take the place of the glass one.

The specifications are as follows:

1. Jar (See Figure I)—The jar was constructed from a piece of brass pipe 6″ outside diameter x 9 3/8″ long x 3/16″ thick. A brass bottom was soldered on and sealed both inside and out. A brass collar holding three eyebolts with wing nuts and washers was slipped on over the top of the jar and screwed into place. The collar was sealed with solder to insure an air tight fit.

2. Cover (See Figure II)—The cover was cast in brass in one piece and notched at points to correspond to the wing nuts attached to the collar of the jar. Four holes were drilled through the top, two for binding posts and two for the inlet and outlet valves. These joints were made tight by painting all screw threads with a combination of graphite and shellac. A copper tube was attached to the under side of the inlet valve leading to the bottom of the jar. The under side of the cover was reamed out to fit a rubber gasket, 5 7/8″ inside diameter x 1/2″ wide, thus cutting down the possibility of gasket spreading and subsequent passage of air into the jar. This point is important, as a flattening of the gasket and air suction into the jar apparently caused the above mentioned explosion. The palladium coil, surrounded by fine mesh brass wire, was suspended from the under side of the cover by two hooks screwed into the cover. The portions of the coil, hooks, and inlet pipe, shown in white in the above figures, were covered with adhesive tape to prevent contact of the coil wire with the metal of the jar.

3. Palladium coil (See Figure II)—The coil was constructed as in the Fildes specifications. 0.25 gm. of asbestos wool were soaked in 1.5 c.c. 10 per cent palladium chloride and the asbestos molded into a small square in an evaporating dish. The mass was gently heated until almost dry and then wrapped around a 1/4″ glass rod with lens paper. A No. 8 rubber stopper (large end out) was

FIGURE I

placed on either end of the rod and a 20 G needle was passed through each. The needles were cut at both ends, thus allowing easy passage for the resistance wire; 2.41 ft. (50 ohms) of 35 G B & S nichrome wire were tightly wound around the asbestos, and the ends passed through the needles in the rubber stoppers. The wire was wound on tightly enough to allow sufficient length on the outside of each stopper for attachment to the under side of the respective binding posts. The coil was heated in a smoky flame, ignited, and finally wrapped in the brass-mesh wire and taped into place. (At this point the coil should ignite a stream of hydrogen.) The coil was suspended on the hooks and the ends of the resistance wire attached to the binding posts.

4. Resistance (See Figure II)—For resistance 2.89 ft. (60 ohms) of 35 G B & S nichrome wire were used instead of light bulbs on a 110 volt circuit. The porcelain coil

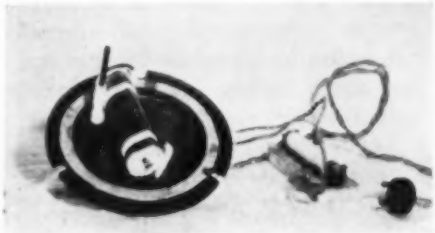

FIGURE II

shown could be much smaller but was the only one available at the time.

5. Hydrogen source (See Figure I)—Technical grade zinc and technical hydrochloric acid were used as the hydrogen source. This source was used deliberately rather than tank hydrogen to assure drop by drop control.

6. Operation—Clamp on top and attach hydrogen generator (See Figure I)—With both valves open, allow a slow but steady stream of hydrogen to pass into the jar for 2 minutes. Shut off hydrogen supply, close both valves, and plug jar and resistance into light circuit for 20 to 30 minutes. During this time the top should heat up so that the change in temperature becomes easily detectable. During the whole operation the connection between the hydrogen generator and the jar should not be broken. Open inlet valve and the vacuum created in jar will be indicated by suction on the acid in the tip of the separatory funnel. Run hydrogen slowly into jar until it will take no more. With the inlet valve open repeat this procedure at intervals of 2 to 3 minutes until the jar will finally take no more hydrogen (total time less than 10 minutes). Close off inlet valve, disconnect resistance and hydrogen generators and incubate the jar.

This jar incorporates the following changes from the Fildes and Brown methods: (*a*) All metal jar; (*b*) standard resistance supplied by nichrome wire; and (*c*) inset gasket in metal cover. The metal jar eliminates the possibility of explosion and allows the use of a well heated palladium coil, the securely seated gasket eliminates air leakage, and the nichrome wire throughout allows a constant number of ohms resistance in the palladium coil and in the resistance unit. The main disadvantage is that the operator is unable to see what growth takes place or to observe whether the methylene blue control tube stays colorless. After several runs, however, the operator is able to predict the efficiency of the jar by the amount of acid taken up in the formation of hydrogen, and to predict the action of the methylene blue tube.

To date the writer has isolated 14 strains of *Cl. tetani* from soils and manure using the Fildes technic and has cultivated stock strains of the organism with extreme ease.

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VITAL STATISTICS

Vital Statistics in Indiana, 1931—The Vital Statistics Division of the Indiana State Board of Health has published a tentative report for the calendar year 1931. According to this report, the state enjoyed last year the lowest general mortality in its history. The death rate from all causes was 11.9 per 1,000 population, as compared with 12.1 in 1930. The birth rate in 1931 was 17.2 as contrasted with a rate of 18.3 in 1930 and 21.6 in 1922.

It is interesting to note that the death rates from tuberculosis (61.1), typhoid fever (2.9), infant diarrhea (13.9), puerperal septicemia (2.6), and from all puerperal causes (9.6) are the lowest from these causes that have ever been recorded in Indiana. Contrasting these rates with the figures shown for 1922, it is noticeable that a great improvement has taken place. Tuberculosis showed a death rate of 88.1 in 1922, the 10-year period 1922–1931 indicating that a reduction of 31 per cent in the death rate from this disease has been effected. In the same period, the typhoid fever death rate has been reduced 63 per cent, infant diarrhea 43 per cent, puerperal septicemia 55 per cent, and all puerperal causes 28 per cent. Diphtheria which showed no reduction in mortality from 1930 to 1931, has, however, dropped from 18.2 in 1922 to 4.1 in 1930 and 1931, a reduction of 77 per cent. Similarly, the infant death rate was not lowered in 1931, the 1930 rate of 57.4 holding in 1931 also. This rate compared with the 1922 rate of 68.1 means a considerable saving of infant lives during the last decade.

There was a noticeable increase in the death rate from cancer (106.1 as compared with 104.6 in 1930 and 94.5 in 1922). This increase in death rate amounts to a 12 per cent increase during the last decade. Deaths from external causes increased from 3,522 in 1930 to 3,660 in 1931, giving death rates of 108.7 and 112.7 for the years 1930 and 1931 respectively. In spite of these increases in cancer and accidental deaths, it is encouraging to note a substantial reduction in the death rate from organic heart disease, from 190.0 in 1930 to 176.8 in 1931, even though this 1931 figure does not compare favorably with the death rate of 156.8 recorded in 1922.

Beside the above mentioned changes in mortality from 1930 to 1931, the report for Indiana showed increases in the mortality from scarlet fever, measles, whooping cough, influenza, suicide, and automobile accidents; while decreases were observed in the mortality from pneumonia, acute poliomyelitis, cerebrospinal meningitis, homicide, smallpox, apoplexy, and Bright's disease.—*Month. Bull.*, Indiana State Board of Health, 35: 2–3 (Jan.), 1932.

Health in New York City, 1931—The New York City commissioner of health, in his annual report submitted December 31, 1931, records the lowest infant death rate (56 per 1,000 births) and the fewest deaths from diphtheria (185) in the history of New York City. Despite the severe economic depression and unusual outbreaks of influenza and poliomyelitis, the general death rate of 10.92 compared favorably with that of 10.76 in 1930 and 11.34 in 1929. The total number of deaths in 1931 was 77,418. There were 954 deaths from influenza in 1931, as compared with 483 in 1930; the outbreak resulted in

about 2,000 deaths above the normal expectancy, however, when deaths registered under pneumonia and other causes, in which influenza played a part, were considered. During the poliomyelitis outbreak, 4,087 cases were reported to the department and there were 490 deaths. In the outbreak of 1916 there were 9,023 cases, with 2,448 deaths.

The year was also marked by a high prevalence of measles, 26,516 cases having been reported; whereas in 1929 there were only 2,500 cases. Deaths from automobile accidents were more numerous than deaths from typhoid fever, measles, scarlet fever, diphtheria, whooping cough, cerebrospinal meningitis, and deaths of mothers in childbirth, combined. There were 1,302 deaths in 1931, an increase of 26 over 1930. Deaths from diabetes amounted to 1,921 as against 1,784 in 1930. Cancer increased from 8,125 in 1930 to 8,333 in 1931. The city's birth rate was 16.31, the lowest ever recorded.—*J. A. M. A.*, 98: 239 (Jan. 16), 1932.

The Geography of Homicide—Geography is an important factor in homicide. Race likewise has a big influence over the murder rate. Density of population and the existence of large cities in the territory seem to have very little to do with homicide. These conclusions appear to be justifiable on the basis of statistics compiled by Dr. R. N. Whitfield, State Registrar of vital statistics in Mississippi, who collected data from all but 6 states in the United States and from Canada for the 3 years of 1928, 1929, and 1930.

According to the figures for 1930, New Hampshire had the lowest recorded murder rate, as shown in the Whitfield data, among the 42 reporting states. Only 4 homicides were registered and the rate per 100,000 population was 0.8. The 5 New England states of Maine, New Hampshire, Vermont, Massachusetts, and Rhode Island, with an average of 132 people per square mile and numerous large cities, had an aggregate average rate of only 1.4 which is by all odds the lowest recorded for the various geographical groups of states.

The highest average for a geographical group of states was 20.9 homicides per 100,000 population, the rate for the East South Central states of Kentucky, Tennessee, Alabama, and Mississippi, where there are only 55 inhabitants per square mile.

The densely populated Middle Atlantic states of New York, New Jersey, and Pennsylvania, with 263 people per square mile, had an average rate of 5.2 compared with 7.3 in the East North Central group with an average of 103 people per square mile and among which Illinois led with 10.5 murders per 100,000 people.

The three Pacific states, with only 26 inhabitants per square mile, had an average rate of 5.2, a figure identical with that for the three Middle Atlantic states and somewhat higher than the figure for the West North Central group, where the density is 26 people per square mile and which had a murder rate of 3.6 per 100,000 population.

While in general the states with a large Negro element in the population experience excessively high homicide rates this does not appear to be the only important determining factor. The New England and the Pacific states, for example, have each almost exactly 1 per cent Negro population and yet the homicide rate in the former was 1.4 against 5.2 in the latter.

Again the homicide rate in North Carolina and in Illinois was almost identical, 10.9 and 10.5, respectively, although Negroes make up 29 per cent of the population in North Carolina and only 4.3 per cent in Illinois. Also in South Carolina the Negro population is 46 per cent of the total against 8.6 per cent in Kentucky, but the murder rate in South Carolina was only 13.9 per

100,000 population, whereas in Kentucky it was 18.6. Mississippi, on the other hand, where 50 per cent of the population is Negro, had a murder rate of 25.7, the highest in the country, but Tennessee had a homicide rate of 18.9, although Negroes make up only 18 per cent of the population. Again, New Jersey has 5.2 per cent Negroes in the population against 4.3 per cent in Illinois, but the murder rate in New Jersey was 5.0 and that in Illinois 10.5. Furthermore, the density of population in New Jersey is 420 per square mile and that in Illinois 116.

This is clear evidence that factors other than race, color, and density of population are involved in the homicide rate. While these statistics relate to the 1930 experience only, there was no great difference in the relative rates in the various states during the 3 years 1928–1930.—*Illinois Health Messenger*, 4: 15–16 (Feb. 15), 1932.

The Population of the Netherlands—The population of the Netherlands has increased rapidly during the past 100 years. From 1829 to 1928 it rose from 2,613,487 to 7,730,577, an increase of 195.86 per cent. This increase in population has been especially rapid during recent years as is illustrated by the fact that during the 70-year period from 1829 to 1898 it increased 100 per cent, while from 1899 to 1928 it increased 66 per cent. Since 1920 the increase has been at the rate of approximately 100,000 per year. This increase resulted in 1928 in a population density of 585.1 per square mile, placing the Netherlands second to Belgium among the European nations in this respect.

As emigration has exceeded immigration, the recent increase in population must have been due to an increasing birth rate or a decreasing death rate, or both. The birth rate in the Netherlands rose until approximately 1875, and has declined steadily since that time. The fairly rapid decline within recent years is doubtless due in part to the great emphasis placed on birth control. On the other hand, the death rate per 1,000 has declined for the past 100 years, but the decline has been especially rapid since 1875.

The figures indicate that the increase in population was chiefly due to an increasing birth rate until the last quarter of the past century, while since that time the declining death rate has played the most important part.

The changes in birth and death rates have not been uniform in all sections of the country. Both have decreased least in the southern provinces. These are the sandy soil areas which developed later than the central clay districts. In North-Brabant, for example, the birth rate per 1,000 was 28.98 in 1927; this was considerably above the figure for the country as a whole, which was 23.11 in the same year, and was exactly the same as the average for the same area for the period 1840–1849. It is only fair to say, however, that between these two periods the birth rate in the province had risen to 34.13. In this same area the death rate did not start to decline until 1870, although throughout most of the rest of the country it had been declining for at least 40 years prior to that date. It has been in the older provinces, for the most part, that the decline in both birth and death rates has been greatest. This has been especially true in North and South Holland. The exact reasons for this are difficult to determine.

Historical, social, and economic factors have all played their parts. These centers were the first to develop economically and have experienced the greatest prosperity. They have also been the centers of the intellectual life of the country and here medical science and sanitation reached their highest development. On the sandy areas the economic and intellectual awakening was

later in arriving. These factors, at least in part, account for variations in the birth and death rates in the two sections.

The birth and death rates and the increase of population vary in communities of different sizes. The larger communities have been increasing in relative importance while the smaller ones have been losing ground. In spite of this, the larger cities have a lower natural increase than the smaller towns. In 1927 communities of more than 100,000 had a death rate of 9.17 per 1,000, while communities of less than 5,000 had a rate of 11.35. In the same year communities of over 100,000 had a birth rate of 18.88, while communities of less than 5,000 had a rate of 25.69. As the variation in birth rates is greater than that in death rates, the increase in population from natural sources is more rapid in the smaller communities. The increasing importance of the larger cities must thus be accounted for by the fact that they are attracting large numbers of people from the smaller towns.—J. F. Bogardus, *Economic Geography*, 8: 43–45 (Jan.), 1932.

Marriages of Girls 14 and 15 Years of Age—An analysis of the marriage records of the State of New York outside of New York City for 1930 shows that in 230 marriages the bride was under 16 years; 33 brides were 14, and 197 brides 15 years of age. The distribution of the ages of the grooms whom these girls married, was as follows: under 20 years, 46; 20–24, 132; 25–29, 32; 30–34, 13; 35 years and over, 7. The youngest groom was 16, the oldest 51 years of age. The median age of the grooms of the 14 year old brides was 22.8 years; of the 15 year old brides, 21.3; and for the combined ages, 21.5 years.

The assertion is often made that child marriages are largely confined to that section of the population which is of foreign birth or of immediate foreign origin. The figures, however, do not support this statement. Of the 230 brides, 10 were foreign born; 5 natives of Italy and 5 of Canada. Of the 220 native born brides, 153 were of native parentage, 12 of mixed parentage, and 55 of foreign parentage. Relating these numbers to all marriages in the several nativity groups, it is found that these child marriages represented 6 in 1,000 of the native born brides of native parentage, the same proportion in the group of native born brides of foreign parentage, while among native born brides of mixed parentage only 2 in 1,000 were 14 or 15 years old.

Among the grooms, 47 were foreign born: 23 were natives of Italy; and 6, of Canada; the remaining ones were natives of twelve different countries. The native born grooms were divided according to parentage as follows: native, 129; mixed, 23; foreign, 31.—*Health News*, New York State Dept. of Health, 8: 230 (Dec. 21), 1931.

PUBLIC HEALTH ENGINEERING

THE SANITARY OFFICER IN RURAL SANITATION*

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Sanitary Engineer, St. Louis Southwestern Railway Lines, Texarkana, Tex.

PERSONAL contact with and observations of the working of county health units and of rural sanitation projects in those counties in states served by the St. Louis Southwestern Railway and other railroads with which I have been associated, suggest these personal views on the present plan of operation of county health units. Nothing I may say should be construed as a criticism of the present plan, or of those with whom it has been my pleasure to be associated, but rather as thoughts for discussion, based on the desire of some of the personnel engaged in rural public health work to make it more effective.

Much has been written of the multiple necessities for county health units, of progress being made, and of what the future holds for their personnel. If we discount the enthusiasm of many of these writers we still have a considerable sum total of accomplishment. This same enthusiasm may have occasionally overreached itself in assigning dollar and cents values to achievements, particularly from the sanitary engineering viewpoint. I refer to the comparative values of privy installations versus sewerage systems and safe water supplies, and to widespread typhoid vaccination with no attention being paid to providing safe water and milk, or to proper screening. Immunization has its proper place, but surely not to the exclusion of basic sanitary health protective measures.

I think it is entirely proper and feasible to include the sanitary portion of rural health work in our southern states within the province of those basically trained in sanitary engineering or those having had instruction fitting them for inspection and disposition of sanitary problems. I refer particularly to rural water supplies, fly and mosquito control, screening, milk production, insect and rodent eradication about the house, and human waste disposal. These, with some others, might be grouped under the heading of environmental sanitation problems. We readily realize that such activities are basic since proper control measures are aimed wholly toward prevention of disease, and, while directed toward the home in most instances, their province and indirect influence extend over the hamlet and city as well. Hookworm, malaria, and dengue, and diseases carried by infected water and milk, can be controlled by proper application of environmental sanitary measures. In my opinion too many of our present health units are missing a wonderful opportunity in not making greater provision for such work.

In seeking the reason for this delinquency, as I may choose to call it, it appears that in our present conception of unit health work, the strictly sanitary functions are being underemphasized. This may be due to a number of reasons, possibly to lack of appreciation of

* Read before the Public Health Engineering Section of the American Public Health Association at the Sixtieth Annual Meeting at Montreal, Canada, September 17, 1931.

such phases of public health work; possibly to inability to secure trained sanitary personnel, but more likely to the confusion in the minds of many otherwise capable men who choose not to view public health work from the broad viewpoint of joint coöperation and responsibility of the medical officer, the sanitary engineer, the bacteriologist, the serologist, the veterinarian, etc.

My feeling is that the so-called standard county health unit can be decidedly improved with a relatively small additional cost. I would suggest no change in the present personnel of doctor, sanitary inspector, nurse, and clerk, but rather for better trained sanitary inspectors, better paid sanitary inspectors, and for trained sanitary engineering supervision for such inspectors, rather than medical officer direction of these sanitary inspectors. Such a plan reserves to the medical officers at the head of our units all the authority granted them by law, all the prerogative of planning health work and of policies to be pursued, but relieves them of immediate direction of sanitary work, and passes this responsibility on to district sanitary officers or engineers, who in turn report to the state sanitary engineer. In other words, just as provision is made for supervision of unit medical directors, so should qualified direction be provided for unit sanitary inspectors, and this can be done without changing the routine working of the units.

But first of all, I would dignify the position now held by the sanitary inspector by changing his title to sanitary officer, and he will be so designated in the balance of this paper. Such a plan will not be an entirely new departure, but I think its merits are obvious. It provides for complete coördination of public health medical and sanitary policies through the present medical director of county health units and the state sanitary engineer, or engineering bureau director, which is of vital importance and is the logical first step in any state-wide health program.

After a definite plan of county health unit activity is decided on, then the sanitary engineering functions, delegated to the state sanitary engineer, will be put into effect by district sanitary engineers, or sanitary officers, who have direct supervision over the county health unit sanitary officers. These district men, with offices in their respective districts, and in charge of sanitary engineering activities in say ten counties, would be the contact men between the unit sanitary officers and the unit medical directors. Local health unit policies would then be handled with promptness. The advice of the district sanitary engineer, a man of professional and practical experience, would be available to the medical director, in the handling of problems with which he is not familiar.

The unit sanitary officer, under district supervision, could share offices, equipment, and stenographic help with the medical director, if advisable, but this would not be necessary. It surely would be advisable to have the medical officer wholly acquainted at all times with the work of the sanitary officer, but difference in personal opinion on the prosecution of coöperative unit health work should be handled by their immediate superiors. A close, harmonious, and self respecting understanding between the medical and sanitary officer could thus be maintained—each an expert in his own profession, and making no pretense toward running the other's business.

There will be reasons for objections to such a proposal. We may be told that a similar plan failed after due trial. Perhaps the failure may have been due to lack of trained sanitary supervision, or to other local handicaps. Surely we can find comparable disappointments in whole time unit activities. In a plea for sanitary engineering supervision of unit sanitary officers, we can speak in

generalities of some of the reasons why this is preferable. Few of our medical directors are qualified by training or have the time to take from the multiplicity of their other non-sanitary activities to direct sanitary engineering work properly. Some of them surely lack the personal inclination for it. Under such conditions, any latent executive ability, when present, cannot very well assert itself, and the inspector becomes an orphan waiting for inspiration that never comes, and is too timid under the penalty of loss of position to be self assertive. In fairness to some of the inspectors who have given up public health work, I think it may be said that they tried and failed, but the fault was not their own.

If there is a basic error in our conception of the present health unit organization, it is that an educated man, skilled in his work, able to contact the lowly and the mighty, and fired with enthusiasm, is not at least a junior partner, with some provision made to reward ability by promotion. Such a condition does not exist at present. Yet we have in our counties the county agricultural agent, a comparable position in my mind with what the sanitary officer should be, and for whom no one need offer apologies. Perhaps the day will come when the county sanitary officer will enjoy the same prestige, the commensurate salary, and the opportunity for increasing health and happiness that the county agent enjoys in his chosen sphere.

Men trained to fill the positions of sanitary officers, as distinct from sanitary inspectors, will be hard to find. I know of no school of instruction for them such as has been available to others engaged in unit work, or as has been available to the layman who with a few weeks' instruction becomes a full fledged sanitary inspector. Our schools are graduating men in courses in sanitary engineering or allied subjects who can fill the sanitary officer positions, and who can get their first taste of the practical application of their profession under expert leadership with the plan just presented.

The cost of the present standard county health unit would be increased under such a plan, principally by the increased salary of the sanitary officer. I suggest the average salary increase, over what now prevails for the sanitary inspector, should approximate $900 a year, or less than 10 per cent of the present unit cost. Part of this increase might be taken from the present budget items without material damage. We now have some states with district sanitary engineering directors. In those states not so progressive, the expense of district sanitary engineers or officers would have to be provided. In the territory with which I am more familiar, one district sanitary engineer could readily supervise the work in ten counties, making the average cost per county, if placed on this basis, not over an additional $540 a year, assuming a $3,000 salary, $900 traveling expenses, $900 stenographic assistance, and a $600 contingent fund, for the district man.

With or without the district engineering supervision of the county sanitary officers, but presupposing efficient state sanitary engineering direction, such a plan as outlined will be a decided improvement, with perhaps the greatest good coming from the coördination in state- and county-wide planning of rural health work of medical and sanitary engineering science, something in my opinion greatly to be desired.

FOOD AND NUTRITION

Proteins of Breads Baked from Rye and Wheat Flours Alone or Combined with Yeast or Soya Bean Flour—These experiments were conducted in Poland and the biological analysis of 17 products is discussed in the present paper. These are divided into 3 groups: (1) various breads commonly consumed in Poland, (2) experimental breads, (3) soya bean flour and baker's yeast. In the preparation of the breads special interest was shown in combinations of rye and wheat flours with varying amounts of baker's yeast and of soya bean flour. The numerical method proposed by Osborne, Mendel and Ferry (*J. Biol. Chem.*, 37: 223) was used for the estimation of the biological value of the proteins of the products studied.

The experiments were made on rats and were usually of 30 days' duration. The composition of each bread used is given, as well as a table showing the protein intake, total intake, gain in weight, etc., on each kind of bread fed.

While the authors made no definite conclusions, the figures would indicate that rye breads in general are superior—so far as the biological value of the protein goes—to wheat products, and that darker rye breads made from less refined flour are superior to lighter varieties. It is also indicated that whole meal rye bread baked from 100 per cent rye flour is inferior to dark rye bread prepared from 82 per cent flour. This might be due to the presence in whole meal rye bread of large amounts of indigestible roughage derived from the grain husks and interfering with the normal utilization of the proteins.

A supplementary relation was found to exist between the proteins of white wheat flour and those of baker's yeast, and also between the proteins of white wheat flour and soya bean flour. There is a strong indication that a supplementary relation exists between the proteins of rye flour and of soya bean flour. The biological value of the nitrogen of crust was found to be lower than that of crumb or of whole bread.—S. K. Kon and Z. Markuze, *Biochem. J.*, 25: 1476, 1931.

Experiments on Nutrition, Comparative Vitamin B_1 Values of Food-Stuffs. Fruits and Vegetables—Tests on the vitamin B_1 values of 30 common fruits and vegetables were made on pairs of pigeons. The preventive method of testing for the presence of vitamin B_1 was used throughout the series of experiments. Cooked vegetables and fruits were used as the means of procuring consumption. No objection can be made to this procedure since many workers have shown that vitamin B_1 is not destroyed by a temperature of 100°. In the first trials with fruits and vegetables 50 per cent of the fresh food was mixed with the flour and fishmeal. Most of the pigeons showed head retraction in from 3 to 9 weeks. After 9 weeks 70 per cent or 80 per cent was then tested.

In no case were the pigeons maintained when the fruit composed 50 per cent of the diet. With 70 per cent of the diet composed of fruit, maintenance was not longer than 9 to 11 weeks, except in the case of orange juice and orange peel. With 80 per cent of tomatoes the birds were maintained for the test period of 26 weeks or more. The test indicated that orange peel is equal to orange juice in vitamin B_1, but

the general appearance of the birds leads to doubt. It is suggested that the oil in the rind has some medicinal action.

Pigeons were maintained on a diet with 80 per cent of cabbage, and 80 per cent of watercress. Lettuce and spinach at 80 per cent and 70 per cent failed to secure maintenance for 26 weeks. Brussels sprouts showed very little vitamin B_1.

Of the roots and tubers tested, artichokes, leeks, parsnips and potatoes contain some vitamin B_1. Beetroot, carrots, swedes, and turnips contain very little.

The results here do not indicate that vegetables and fruits have any important value as a source of vitamin B_1 in the general human dietary. In order to supply sufficient vitamin B_1, from 60 per cent to 80 per cent of the diet must be composed of these foodstuffs in the fresh state, amounts impossible for man to consume. The amount of vegetable usually eaten by man is not alone enough for his vitamin B_1 requirement. —Robert Henry Aders Plimmer, William Henry Raymond, and John Lowndes, *Biochem. J.*, 25: 1788, 1931.

The Antiscorbutic Vitamin in Home-Canned Carrots—The purpose of this study was to determine the difference, if any, of the effect of pressure-cooker and water-bath processing on vitamin C potency. Carrots were used because they are a good source of vitamin C and because both methods are employed. When the water bath is used it is customary to add a small amount of vinegar or lemon juice to increase the effectiveness of the heating process in killing microörganisms. The carrots were canned in 3 ways: (1) water bath with vinegar, (2) pressure cooker with vinegar, and (3) pressure cooker without vinegar.

Normal guinea pigs, weighing about 350 mg. were fed a basal diet, lacking in vitamin C, consisting of ground oats, wheat bran, skim-milk powder, butterfat and sodium chloride. To insure vitamin D sufficiency, in some of the later experiments, cod liver oil replaced 2 per cent of the butterfat.

The results indicate that practically all the vitamin C present in raw carrots is destroyed when carrots are cold packed with a small amount of vinegar and heated in a water bath for 90 minutes, or are processed with or without vinegar in a steam-pressure cooker for 40 minutes at 10 lb. pressure. A daily dose of 15 to 20 gm. of raw carrots was required to protect a guinea pig from scurvy, but even when 50 gm. of canned carrots were fed, most of the animals developed severe cases of scurvy and all of them died before the end of the test period. No difference was noted in the carrots processed in the pressure cooker with and without the addition of acid.—Adelaide Spohn and Amy Hunter, *J. Agri. Res.*, 43: 1101 (Dec. 15), 1931.

The Antiscorbutic Vitamin in the Juice of Home-Canned Tomatoes—Since carrots are representative of the "nonacid" class of foods, and since they were shown to lose their vitamin C potency when home canned, it was considered of interest to determine the effect of home canning on a food having a natural pH greater than that of carrots. Tomatoes were chosen since they are a typical acid food. Two varieties of tomatoes, Globe and Bonny Best, were used. They were cold packed and processed for 20 minutes. Guinea pigs, weighing an average of 350 gm. were fed a basal diet of skim-milk powder, ground whole oats, wheat bran, butterfat, and sodium chloride. The control group received only the basal diet and distilled water, while the remaining animals received in addition 1 to 4 c.c. of either canned or raw tomato juice.

A considerable loss of vitamin C in the canned product was indicated. Three and one-half c.c. of the raw tomato juice was sufficient to protect the guinea pigs from scurvy, while 4 c.c. of the juice of the canned tomatoes failed to protect the animals.—Adelaide Spohn, *J. Agri. Res.*, 43: 1109 (Dec. 15), 1931.

Vitamin G and the Growth Factor in Tomato Juice—The animals used in this experiment were young rats, approximately 4 weeks old, weighing 30 to 40 gm. each. They were placed in individual screen-bottomed cages and fed the following ration: casein, cornstarch, Osborne and Mendel salt mixture, lard, and 2 drops of cod liver oil per rat daily. After 1 week of depletion on the basal ration devoid of all factors of the B complex, constant weights were obtained. Graded doses of tomato juice were then fed daily in separate cups for an 8 weeks' period. Weights of the animals were recorded daily as well as symptoms of deficiency.

In the groups that lived long enough to develop a dermatitis, it always appeared in approximately 44 days, regardless of the amount of tomato juice fed. That the dermatitis was of nutritional origin, and not of epidemic nature, is indicated by the fact that the rats were kept on the same racks as some rats used in vitamin A assay experiments, and these showed no dermatitis. This shows the absence of vitamin G from the tomato juice.

On the smaller quantities of juice, the rats showed a loss of weight and on the larger doses a gain. It is shown that this gain cannot be correlated with any presence of vitamin G and probably is not related to the presence of vitamin B (B_1) since previous experiments (*Biochem. J.*, 24: 1827, 1930, *J. Biol. Chem.*, 89: 275, 1930) have shown the absence of growth when rats were fed an abundance of this vitamin. This growth factor, therefore, probably is Reader's B_4 or the vitamin F, of which Sure, Smith and Kik speak (*Science*, 73: 242, 1931).—R. G. Daggs and A. G. Eaton, Dept. of Vital Economics, University of Rochester, Abstract, *Science*, 75: 222 (Feb. 19), 1932.

An Economical Method of Producing Acidophilus Milk—The method reported by the author is claimed to overcome some of the difficulties encountered in the commercial production of acidophilus milk. It is stated that the problem involved in the manufacture of acidophilus milk is possibly that of eliminating fast growing sporulating organisms.

The method consists in incubating skim milk at 37° to 47° C. for 2½ to 3 hours, heating to as near the boiling point as possible for 30 minutes, quick cooling at 37° to 40° C., prompt inoculation with an active culture of *Lactobacillus acidophilus* and holding at that temperature until coagulation takes place.

The method is certain to give a better product than the one now in use, and has the merit of cutting in half the time required to prepare the skim milk for inoculation.—Georges Knaysi, *J. Dairy Sci.*, 15: 71 (Jan.), 1932.

The Effect of Pasteurization upon Brucella Melitensis Var. Suis—A series of experiments are reported upon the pasteurization effects of bovine and the more heat resistant porcine strains of Brucella. The authors concluded that pasteurization tests, using a standard pasteurizing outfit show that a temperature of 62°–63° C. (143.6°–145.4° F.) applied 3 minutes is sufficient to destroy Brucella organisms, both the bovine and porcine varieties.

This indicates that the usual pasteurization temperature of 62–63° C. for 30 minutes gives an ample factor of safety providing the pasteurizer is operated properly.

With the lid of the pasteurizer open, a much longer time exposure to this temperature is required, and the results obtained are irregular and uncertain in that viable organisms were recovered from the foam even after 30 minutes pasteurization. The absolute necessity of a flush gate valve is also indicated, for in those experiments in which an ordinary faucet outlet was used, viable organisms were obtained from the outlet after 30 minutes' pasteurization, whereas, with the outlet closed by a stopper on the inside, no living organisms remained after 3 minutes exposure.

These experiments emphasize the importance of carefully conducted operations in pasteurization if successful results are to be obtained.—Charles Murray, S. H. McNutt, and Paul Purwin, *J. Dairy Sci.*, 15: 6 (Jan.), 1932.

INDUSTRIAL HYGIENE

The Baltimore Gas Appliance Ordinance and its Relation to Public Health—The use of gas is, as is well known, attended with danger due to the poisonous effects of its carbon monoxide. Many cities have passed ordinances controlling the sale of gas burning appliances in an effort to prevent the occurrences of cases of poisoning. The author briefly reviews the ordinances of Newark, Los Angeles, New York, Hartford, Berkeley, Pasadena, and Baltimore.

The effects of carbon monoxide in producing both acute and chronic poisoning are presented in some detail which need not be abstracted here.

The steps taken in the development of the Baltimore gas appliance ordinance are described at length. This development should serve as a guide to other cities contemplating the promulgation of ordinances regulating gas appliances.

Finally the results of a study of circulating tank water heaters is described. Eighty-nine heaters were tested. Of these, 64 (71.9 per cent) produced less than the specified allowable upper limit of carbon monoxide, namely, 2 parts per 10,000 of air. Three heaters produced between 26 and 50 parts of CO, two produced from 51 to 100 parts and 2 produced between 100 and 200 parts. In no instance did a registered appliance produce dangerous concentrations of CO. One hot water heater in a kitchen was found to be producing a concentration of 170 parts. When the kitchen was closed tightly and the heater was allowed to burn for 1 hour, the air in the room was found to contain 25 parts of CO per 10,000. These very interesting and valuable studies are to be continued.—Wilmer H. Schulze, *J. Indust. Hyg.*, Feb., 1932, p. 41.

L. G.

Occupational Diseases in the Wood Industry—The most frequent symptoms of poisoning from wood are the various forms of skin disease. These affections may vary from a slight reddish irritation to a general eczema. Lesions generally make their appearance on the exposed parts of the body first and then later may spread to other portions. Palpitation, shortness of breath and dizziness may become manifest and in more serious cases there may be systemic effects, such as digestive disturbances, glycosuria, and renal disease.

Oftentimes persons who have once suffered from eczema may develop hypersensitiveness so that the exposure to

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Oftentimes persons who have once suffered from eczema may develop hypersensitiveness so that the exposure to

dust in a room where these toxic woods are being handled may cause a return of the disease.

There are many varieties of tropical woods which contain toxic principles. For its value as a reference the more important of these may be listed as follows: the wood of the date and cocoanut palm and the tabago palm all generally known as zebra wood; moule wood of West Africa; ironwood from the West Indies; West Indian greenheart, rosewood or blackwood, satinwood, renghas, amboyna, teak, ebony, boxwood, and others.—*Bull. Internat. Union Woodworkers* (Berlin). Abstr. *M. L. R.*, Feb., 1932, p. 301. L. G.

An Investigation of the Kelley Dust Trap for Use with Pneumatic Rock Drills of the "Jackhammer" Type—The Kelley dust trap consists of a small metal chamber, in form somewhat like an inverted tin water dipper, which is designed to enclose the steel drill rod used in rock drilling, at the point where the drill enters the rock. It does not fit about the drill rod tightly nor does it make an airtight seal at the rock surface. The dust trap is connected to a source of suction by means of a flexible hose.

As a result of these studies, it was found that 60 cu. ft. of air per minute per drill are required in order to maintain the atmosphere in the neighborhood of the worker at 5 million particles per cu. ft. of air, when tested with the Greenburg-Smith impinger apparatus. Certain additional engineering data of value were obtained during the course of this study. These data need not however be presented here.

This is an exceedingly important contribution and one which should have a far reaching bearing on the control of silicosis in rock drilling.—Theodore Hatch, George S. Kelley, and J. William Fehnel, *J. Indust. Hyg.*, Feb., 1932, p. 69. L. G.

Fatigue in Soldiers Due to Chlorine Losses—Pathological fatigue is no longer solely attributed to the accumulation within the body of waste products of muscular effort. Both bodily and environmental conditions directly contribute to it, and an extensive bibliography has been prepared on industrial fatigue by the Committee on Industrial Fatigue and Allied Subjects of the American Public Health Association as well as a valuable Review on Physiological Effects of Abnormal Temperatures and Humidities, by R. R. Sayers and Sarah J. Davenport of the U. S. Public Health Service.

Conditions surrounding military training or actual warfare are often conducive to gross losses of body fluids due to sweating. (A discussion is devoted to the subject of the chemistry and physiology of perspiration, including the amount of water eliminated under certain conditions; likewise, a section on the changes in chloride constituency of sweat, blood, and cellular tissues associated with sweating.)

Among numerous reports indicating the practicability of replacing chloride losses, following profuse sweating, by the addition of sodium chloride, is an instance in which a group of 14 men working in hot mines, where fatigue and cramps prevailed, obtained gratifying results when given 0.25 per cent of sodium chloride to the gallon of drinking water. Likewise, Oswald, Haldane, Marschak and Dukelskaga and others have reported favorably upon the disappearance of symptoms, associated with overheating, through the use of saline solutions. The desire to eat salted meat such as salted red herring among British miners engaged in hot work is undoubtedly a point in illustration. Scores of industries are now supplying salinized drinking water for the purpose of replacing unwanted losses of minerals in sweating. It is felt that the use of tablets of salts for this purpose

are potentially dangerous since they may cause stomach irritation.

As sweating is prolonged the percentage of chlorides increases in the sweat, and in an average case the loss from the body of chlorides approximates 20 gm. per day– much more than would normally be replaced in the chlorides of foods and drinks. Obviously, water alone does not alleviate the condition.

A 0.5 per cent solution of sodium chloride in the face of excessive sweating should promote a sense of comfort and well being, avoid cramps in muscle groups and in the intestinal tract, avoid the deprivation of minerals and water in the tissues, and prevent gastric hypoacidity. The use of 0.5 to 1.0 per cent of common salt in drinking water is recommended for military purposes under all conditions conducive to undue chloride losses in personnel. (Bibliography follows.)—Carey P. McCord, *Military Surgeon*, 69, 6: 608–614 (Dec.), 1931. E. R. H.

Hydrocyanic Acid Gas Poisoning by Absorption Through the Skin—This brief contribution presents a review of the literature of hydrocyanic acid gas poisoning by skin absorption. Three cases of poisoning by skin absorption are briefly described. In all these cases satisfactory respiratory protection was had, yet poisoning occurred when the men were in an atmosphere of 2 per cent of hydrocyanic acid gas. The symptoms developing in 8 to 10 minutes of exposure were dizziness, weakness and throbbing pulse. Several hours after exposure marked weakness, high pulse rate and headache still persisted.—Philip Drinker, *J. Indust. Hyg.*, Feb., 1932, p. 1. L. G.

A Pressure Chamber Installation for Studying the Physiologic Effects of Pressures Varying from 6 to 60 lb. per sq. in.—This is a description of an experimental chamber installed at the Harvard School of Public Health for the study of the physiological effects of pressures from 6 to 60 lb. on the human organism.

A description of the apparatus need not be presented here. The apparatus appears to be excellently designed for the purpose at hand and should yield results of value at the hands of the Harvard investigators.—R. M. Thompson, C. P. Yaglou, and A. B. Van Woert, *J. Indust. Hyg.*, Feb., 1932, p. 57. L. G.

CHILD HYGIENE

CHILD HYGIENE WORK OF A COUNTY DEPARTMENT OF HEALTH

ON February 1, 1925, the Fourth Demonstration of the Commonwealth Fund Program for Child Health was officially launched in Marion County, Ore. According to the 1920 census, Marion County had a population of 47,177, only a little more than half of which lived in cities, towns and villages. The rest lived in the open country. Local authorities and committees coöperated with the Commonwealth Fund for a period of 5 years, after which time the work was taken over entirely by local authorities and given the name of the "Marion County Department of Health."

A recent report from Marion County states:

> Like many other public health activities, child health is not one which can be carried on successfully when only the child itself is concerned. The whole community must undergo considerable improvement before the children will show improved conditions of health.
>
> Marion County has a population of slightly more than 56,000 (exclusive of several state hospitals and institutions), four-sevenths of which is classed as rural; 85 per cent of the people in the county are native whites.

I. Prenatal and Maternal Hygiene

The very beginning of the child health program of any organization starts with the prenatal and maternal hygiene activities. The nurses in the Marion County Health Department, under the direction of physicians, make visits to prospective mothers, giving instructions in general hygiene and diet and advising regular examinations by their physicians. The value of pelvic measurements, urinalyses, blood tests and blood counts, and blood pressure determinations, are explained . . . All deliveries are made by private physicians, a large percentage of which take place in the hospitals throughout the county.

II. Infant Hygiene

Nurses also call in the homes of the newborn when requested, for the purpose of carrying on some bedside care and general advice to mothers. In this manner many infant lives are saved, for it is during the first day or the first month that most infants die, and if these difficult days are passed without mishap there is a good chance for the infant to develop into healthful childhood.

Copies of birth certificates or birth notification blanks are made out, and so far as possible they are delivered to the home so that the nurse has an opportunity of coming into direct contact with many of the mothers. This also makes it possible for the nurse to urge the mother to have the baby examined regularly by a physician, who can also weigh the infant and give such advice as is necessary for the proper feeding and care of the baby. At this time the mother is given information concerning the advisability of having her infant immunized against diphtheria and smallpox before it reaches its first birthday.

Clinics are conducted regularly throughout the county in 10 different centers, and at more irregular intervals at other places. To these centers the mothers may bring their babies for weighing and examination by a physician. The clinic does not aim to take the infant away from the private physician but serves rather to point out the value of such examinations, and provides an opportunity for urging the mothers to have their children regularly examined by their own physicians if possible. Defects are pointed out and general advice as to care and diet is given. Except in the case of indigent families, mothers are not urged to bring their infants back to the clinic oftener than 3 or 4 times a year, this number of visits being thought sufficient to impress upon the mothers the advisability of regular examinations. Nurses make follow-up calls to see that the instructions received in the clinic are carried out. The nurses in Salem also conduct demonstrations, at which

time the infants are weighed and the mothers are given general information on child care.

From 1925 to 1931 the infant mortality rate for Marion County has drifted downward from 50.1 to 46.5 in 1931; the year 1930 shows the most favorable rate (36.4) of the period. The city of Salem, which lies in Marion County, shows an even more encouraging decrease in rates from 48.7 in 1927 to 33.6 in 1931. This would indicate that more concentration of work in rural districts is needed.

III. Preschool Hygiene

The activities for preschool children are mainly a continuation of the infant hygiene work. Clinics to which the preschool child is brought are held in conjunction with the infant clinics. The same type of examination is carried out, and the same follow-up system is used. Health habits are given considerable attention in the clinics, and behavior problems are dealt with in so far as the examining physicians are able to advise. The mothers are advised to consult the family physician and the family dentist regularly. Immunization against diphtheria and smallpox is stressed and regular days are given over to immunization clinics throughout the county. About 50 per cent of the preschool children in Salem are now immunized, and for the county as a whole the percentage is probably a little lower.

While no "round-ups" as such are conducted by the health department staff or any other organization in the county in a wholesale fashion, special efforts are made during the summer months to examine and reëxamine as many children as possible before they enter school for the first time in the fall. This is done through the regularly scheduled clinics and appears to be much more effective and satisfactory than using wholesale methods. From one-third to one-half of the new entries in school are thus examined before they enter school.

The blank used for recording the results of the physical examination, called the "health record," is one that is used from infancy through the entire school period, but obviously this is possible only because the same organization is responsible for all the health activities of children in the community.

IV. School Hygiene

In a school population of a little over 12,000 children, about one-third are examined each year . . . The health department does not endeavor to do any corrective work except for a few dental defects occurring in children from indigent families. The teachers and nurses coöperate in getting the parents to go to the family physician or dentist, or arrangements are made to send the children to hospitals, dispensaries, and the like, for needed corrections.

The teachers are responsible for weighing and measuring the children in their charge at regular intervals. They test the vision and hearing of each child. Daily inspections are made for the presence of contagious diseases, and the nurses make periodic visits to each school to carry on the usual routine matters. Home calls are made, when necessary, by nurses.

Dental examinations are made on all children in school so far as possible each year, by a dentist on the health department staff. He also does a few corrections, but the great majority are made by private dentists. In 1930, 8,630 children were examined by the school dentist, among which number 6,132 were found to have dental defects. Two hundred and seventy-six of them were treated at the health department dental clinic, and 3,054 received corrections at the hands of their own private dentists. Since the school dentist is only working on a part-time basis many defects went uncorrected.

Immunizations against diphtheria and smallpox are urged, although they are not compulsory for school attendance anywhere in the county except in the event of epidemics. Immunization clinics are held each Saturday morning throughout the year at the headquarters of the health department in Salem. In addition to this, immunizations are also carried out in the schools at least once a year. In Salem it has been estimated, by taking a census in various schools, that 67 to 72 per cent of the elementary school children have been immunized against these two diseases, but the percentage in the remainder of the county is probably slightly lower. Because of the low incidence of typhoid fever in the county, no immunization for this disease is offered, careful attention being given to general sanitation for its prevention . . .

In the schools of the county the May Day programs are a prominent feature. On this day special attention is focused on those who have attained a place on the Honor Roll of the schools. To reach such a place the pupils must have shown:

1. Satisfactory practice of health habits
2. Satisfactory behavior and attitude in school

3. Satisfactory nutrition or gain in weight
4. Freedom from remedial physical defects
5. Evidences of immunity to diphtheria and smallpox

In order to impress the teachers with the value of periodic health examinations, they are required to have a complete physical examination at least every two years. This also tends to eliminate those teachers who are not physically fit and those whose health might be a menace to that of the pupils.

V. Communicable Disease Control

The control of communicable diseases constitutes one of the very important functions of the health department and for the most part is concerned with children. Besides checking communicable diseases by isolation and quarantining cases, following up contacts, and making calls on suspects for diagnosis, control measures are carried on, such as immunization, and also improvement in the sanitary conditions.

The following table of communicable disease incidence will show some of the results of this campaign in Marion County.

VI. Tuberculosis Control

Tuberculosis remains a constant menace to the health of the children of Marion County although a very small percentage of them are to be found with active lesions. The majority of those who die of tuberculosis in the county, or those who show clinical signs of the disease, are among adults, but it must be constantly borne in mind that these adults receive their initial infection in childhood. Control work consists in examining and tuberculin testing all contacts, as well as many who have the disease in the active or arrested stage. Clinics for this purpose are held in various parts of the county and nurses carry on follow-up work on all known tuberculosis cases and contacts.

The tuberculosis death rate for the United States in 1930 was between 85 and 90 per 100,000; for Oregon the rate for the same year was 49.6, while the rate for Marion County was 37.4. At the present time the greatest problem in the control of the disease in the county is in the rural sections, almost three times more deaths occurring in the rural sections than in the urban.

	Smallpox		*Diphtheria*		*Typhoid*		*Scarlet Fever*	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1924	32	1	265	17	9	2	79	1
1925	181	0	165	17	4	1	47	2
1926	53	2	87	2	17	1	71	0
1927	39	0	41	1	28	3	54	1
1928	26	0	23	0	8	0	51	0
1929	36	0	24	1	4	1	56	0
1930	12	0	41	0	4	1	35	0
1931	10	0	20	2	3	0	44	1

PUBLIC HEALTH NURSING*

The Public Health Nurse and Her Uniform—Public health nurses are constantly making pictures of themselves, and what the world knows of them depends largely upon the kind of picture they present. The line, color and texture of a nurse's clothes play a big part in this picture, and the wise nurse makes them work for her by having them express the strength, firmness, robustness of purpose, maturity and dignity for which her profession stands.

Color makes the first impression. It must be practical, attractive and becoming to the majority. Intense colors, like red and yellow, and dull and muddy ones like browns are equally to be avoided. Light or medium blues are good because they are associated with calmness and serenity.

Dark values are better for street uni-

* Please send printed matter or other material relating to public health nursing to Eva F. MacDougall, 6 State House Annex, Indianapolis, Ind.

forms. Clear navy blue, oxford grey, forestry green, or the greenish khaki found in some woolen materials are safe choices. Sharp color contrasts like dark blue and white, cream and greenish khaki, etc., put vitality into a costume.

Materials should be heavy enough to contradict any effect of flimsiness or delicacy; they should be sportsmanlike and make up well in a tailored style.

The straight lines are those to be emphasized in a uniform. "A widely pleated straight skirt is better than a more finely pleated one. A gored or a six gored skirt is better than a circular cut. A collar with a plain straight edge is better than a scalloped one. Long sleeves are better than short. . . ." Bows and lace should never be worn. If a pin is worn it should not be a delicate exquisite thing, but one of good size, hardy in character, with no bright and shining jewels.

It is best to have the uniform coat long enough to cover the dress, so there can be a long unbroken line. All the buttons on the coat should function. The coat belt should buckle rather than tie. Large pockets are better than small ones on a coat.

The uniform hat can express the same smart severity and sturdy sportsmanlike character that the good uniform coat expresses. Felt is good material. There is no place for fluffy trimming, perky bows or shining pins, however. If there must be trimming, grosgrain ribbon or a leather band, kept flat, is best.

The shoes should be uniform, too. They should be no more frail than the hat or coat. This eliminates modified oxfords with many cut-outs and shoes with three or more straps. The heels should have a decently large walking surface. It is best to keep the color of the shoes dark. Shoes and handbag should match.

Flowered chiffon scarfs are not to be worn with a uniform coat; they are for other occasions. A double silk or a soft woolen scarf goes better with the heavy texture of a uniform coat.

Cast-off dress gloves with fancy stitching and wrist bands go as badly with a uniform coat as a flowered chiffon scarf does. Gloves of the simple pull-on type with plain stitching are best.

Dainty lace or embroidered handkerchiefs do not go with the uniform. They should be of good size with a fairly wide hem.

Clothes should fit the times as well as the person and occasion. For instance, the health worker should not wear her belt 5 inches lower than the waist when every other woman has hers at the waist line, nor should she wear her skirt at knee length if medium length skirts are being worn.

To sum up:

> The successful uniform of the public health nurse must be a composite expression. It should indicate the high purposes of the profession, recognize the environment where it is worn, suggest current fashion to a degree that reflects the best of the times in which we live, and consider the individual nurse sufficiently to make her feel at home in her professional costume. Its artistry makes the nurse good to look at, and creates a pleasant attention bespeaking confidence. When it accomplishes this, it makes a contribution not many of us know how to perform for ourselves in our own costumes. Such a uniform is a professional asset.—

Bessie Cameron McDermand, The Uniform—A Professional Asset, *Pub. Health Nurs.*, XXIV, 2: 95–98 (Feb.), 1932.

Apropos uniforms the *Semi-Monthly News Letter*, West Virginia State Department of Health, Feb. 17, 1932, has this to say under "We All Like Uniforms":

> The effect of the neat trim uniform of a public health nurse on the pupils in a rural school was shown recently when one of the boys in the fourth grade asked to be excused from class while the nurse was inspecting the children in the third grade. In a short time he returned with a broad smile, a very clean,

freshly scrubbed face—and his Sunday suit. Thus had the nurse's immaculate appearance brought about a result that the teacher had been working on for weeks.

Joint Biennial Convention of Three National Nursing Organizations—Texas will be hostess for the biennial convention of three national nursing associations, the American Nurses' Association, the National Organization for Public Health Nursing, and the National League of Nursing Education, in San Antonio, April 11–15, 1932.

The following program for the joint sessions of the three organizations offers discussions on questions vital not only to nurses but also to the public which stands in need of the commodity which the nurse has to sell, and indicates the realization of a crisis in the profession of nursing and a serious attempt at finding a fair way to meet it:

Tuesday, April 12

Subject: Nursing at the Cross-Roads.

A. Implications for nursing in the findings of two 5-year studies.

The Costs of Medical Care Committee.

The Grading Committee.

B. Significant Adjustments in Nursing Service.

C. Partnership with the Public.

Wednesday, April 13

Subject: Next Steps for Nursing.

A. How shall we select and prepare the undergraduate nurse?

B. How shall we select and prepare the graduate nurse?

C. How shall we distribute nursing service equitably?

Subject: Mental Hygiene through the Profession.

A. The Growth of Mental Hygiene.

B. A Mental Hygiene Point of View in Nursing.

C. Attempting an Application in the Various Fields of Nursing.

Evening—Subject: The Economic Situation.

Still keeping these larger questions in mind, special groups will meet to discuss special problems. Private duty nurses will discuss the need for keeping up with new developments and how. The government nurses will give and take ideas about their problems, and the legislative section of the American Nurses' Association will discuss fundamental principles to be incorporated in a nurse practise act.

Board and committee members of public health nursing services will tackle the fundamental problem of how we are to make our services meet the needs with our restricted budgets.

State and official groups of public health nurses will discuss team-play between official and nonofficial agencies and between public health nurses and social workers.

Staff nurses, school nurses, industrial nurses, course directors, state advisory nurses, and teachers will meet in special sessions to discuss questions pertinent to their fields.

This opportunity for the give-and-take of ideas, for the reunion of friends and fellow-workers under the blue sky of Texas, is one which comes at a time when fresh courage which comes from exchanging experiences is greatly needed.

REFERENCES

The N. O. P. H. N. Biennial Program, *Pub. Health Nurs.*, XXIV, 2: 106 (Feb.), 1932.

The American Nurses' Association, *Am. J. Nurs.*, XXXII, 2: 223–225 (Feb.), 1932.

San Antonio is Calling, *Listening In*, N. O. P. H. N., I, 17 (Feb.), 1932.

Preliminary Program, Joint Sessions of Biennial Convention, *Pub. Health Nurs.*, XXIV, 1: 44 (Jan.), 1932.

V. A. J.

Education for Public Health Nursing Board Members—The duties of public health nursing board members are to employ a competent executive, keep themselves informed about the work of their agency, develop the agency's program, and interpret its work to the community.

But, as George E. Vincent says in the introduction to *The Board Members'*

Manual, "Board members are not necessarily congenitally and automatically endowed with capacities and aptitudes for their duties. They too require special knowledge and technical efficiency." How can the board tell who is a competent executive or interpret intelligently the professional histories of the applicants (if they know where to get them) if they do not know the standards of qualification in this particular field? If the board members are not in touch with what is being done in the whole public health nursing field, how can they judge the accomplishments of their own agency? If they do not know the general objectives of their own program, how can they interpret them correctly to the community?

For several years now public health nursing board members have been trying to equip themselves to meet intelligently the problems of their public health nursing program. They have been holding institutes in various parts of the country at which they have discussed board organization, standards of volunteer service, publicity, community responsibility, etc., under expert leadership.

A special department for board members was set up in *Public Health Nursing*, the official magazine of the National Organization for Public Health Nursing, which deals with their interests. A special section of the biennial convention in 1928 was organized for board and committee members. State nursing conventions soon followed this example. Later board members developed so much activity that a full-time lay secretary to represent them was added to the staff of the N. O. P. H. N.

A twofold study program for board members was planned last October by the N. O. P. H. N. One part of the program is for city public health nursing groups, the other for rural or county groups. It is interesting to know that 125 boards are working on one phase or another of this program. Some of them are beginning to get interested in knowing what constitutes an ideal program for the health officer in a community and what constitutes good coöperation between the social and health agencies of a community.

Board members are becoming increasingly impatient of fellow members who are content to be on the board, come to occasional meetings, but who are hazy as to what it is all about. Such members are fading out of the picture, or are taking on new life and striving to live up to one of their community privileges and responsibilities. The public health nursing field claims no monopoly of board members alert to measure up to their responsibilities in the organization partnership, but the N. O. P. H. N. is unique in that it is giving thoughtful guidance to this new striving for board education.—Evelyn K. Davis, Board Education, *Midmonthly Survey*, Feb., 1932, p. 548.

EDUCATION AND PUBLICITY*

NOW Is The Time—More than ever now is the time for skillful presentation of the claims of health agencies, public and private, for wholehearted community acceptance and support.

And now is the time for critical reviewing of what we have said and done which actually and effectively explains the significance of the agencies which carry on public health activities. The cutting of budgets in some sections seems to imply that we have not done a good enough job of explaining ourselves. This calls for more than "getting our names into the papers." It means more than telling about our activities. Probably the surface indications of general good health may be a handicap at this time. How important is the organized health movement at all times? Have we done what we could to tell the public?

DATES TO REMEMBER

Philadelphia, May 15–21, 1932—This place and date offers the next national opportunity for those concerned with publicity-interpretation-education.

The Social Work Publicity Council will hold luncheon, afternoon, and dinner sessions.

The Educational Publicity Division will hold 5 morning sessions.

The Health Division will hold 5 morning sessions.

The Education and Publicity Headquarters will display many helps for the job, and a wide range of selected samples of publicity. There will be a special demonstration of amateur movies. The Headquarters will offer consultation with specialists in many phases of public presentation of health and welfare topics. Frank Kiernan, of the Massachusetts Tuberculosis and Massachusetts Social Hygiene Associations, is chairman of the session on house organs.

For information address National Conference of Social Work, 82 N. High St., Columbus, O., or Social Work Publicity Council, 130 East 22d St., New York.

Following are some of the topics to be presented:

Creative Writing In Relation To Social Problems; Dilemmas In Public Relations; Small City Newspapers; National Publicity In Support Of Local Campaigns; Can We Have Better House Organs? and What Shall We Tell The Public Next Year?

Colorado Springs, June 6–9, 1932—In the sessions of the National Tuberculosis Assn. will be the following topics:

"Place and Function of Tuberculosis Associations in Relation to Child Health Education," Dr. Kendall Emerson; "Essentials of Health Publicity," Dr. Iago Galdston; "Planning and Conducting Successful Public Health Meetings," W. F. Higby; "Cashing In On E. D. C.," Dr. H. E. Kleinschmidt.

Denver, June 9–11, 1932—In the meeting of the Western Branch, A. P.

* Please address questions, samples of printed matter, criticisms of anything which appears herein, etc., to Evart G. Routzahn, 130 E. 22d St., New York, N. Y.

H. A., Dr. Walter H. Brown, Stanford University, will present "Adult Health Education," and Prof. Clair V. Langton and Dr. Thomas A. Storey will present "Teaching Hygiene to Teachers."

There will be Demonstrations of Preschool and Parent Health Education, Intensive School Health Program, and Health Publicity.

Ask Your Senator or Representative—A large proportion of the edition of many government publications is placed at the disposal of senators and representatives. So why not first write to one of them when you want a government publication?

Expanding Section Membership—Last month the Council of Public Health Education Section had the privilege of accepting as members or Fellows a considerable and representative group from the list of those who had not been affiliated with any Section.

We welcome you! We think we have something worthwhile to offer you in the fellowship of this Section. We are confident that you have much to share with us who have been Section members.

We invite you most cordially to participation in Section activities.

What Is Now Being Told—Probably more state departments send out weekly press releases than are reported below. We list those releases so that those interested may secure copies. Then the wide variety of topics suggests speculation as to the practicability of anything in the nature of a progressive program of popular health education.

Connecticut: "Cause and Cure of Cancer"; "Smallpox Spreads From Bridgeport"; "National Negro Health Week"; "Children Made Fit For School Life"; "Food Values Past and Present"; "Prevalence and Nature of Cancer"; "Common Cold Not To Be Taken Lightly"; "Syphilis."

Illinois: "Personal Habits and Health In Winter"; "Variation In Adaptability Of Normal People to Environment"; "Non-Fatal Danger of Scarlet Fever"; "Water: Public and Private"; "The Peace Problem Between Mankind And Germs"; "The Moon As a Factor in Human Health And Welfare"; "The Shrinking Family And Its Influence On Health"; "The Challenge Of Colds and Pneumonia"; "When A Cold Is Not A Cold" (all radio talks). Releases, without titles, on following: scarlet fever; widows in population; appendicitis; hydrophobia; bovine tuberculosis; health effects of depression; dental defects by occupational groups; automobile accidents; influenza; polluted air; respiratory diseases; tuberculosis sanatoria; physical examination of milk handlers; the food dollar; diphtheria; birth rate decline. Almost all of above are based on Illinois statistics, probably the fullest use made of state statistical data.

Iowa: "I See" (defective vision); "Parents Can Eradicate Diphtheria"; "Disease Conditions In 1931"; "Making the Breaks" (value of prenatal information); "Milk" (when raw milk is safe); "Influenza"; "From Pail To Palate."

Maryland: "Don't Wait Until The Teeth Ache"; "Keep The Well Children Away From Those Who Have Colds"; "Child Health Conferences"; "Indispensables" (in diet).

New York: "How The State Department of Health Protects Your Milk Supply"; "Depression Lunches" (office workers); "The Sanitation Of Our Surroundings"; "How Polluted Water Is Made Safe For Domestic Use"; "Purification of Public Water Supplies." All report radio talks.

Oregon: "How to Buy Food at Low Cost"; "Typhoid In Oregon—1909 to 1931"; "Automobile Accidents Are Preventable."

Other frequent press releases we receive come from the following:

U. S. Public Health Service: "Rickets"; "The Prevention and Control of Venereal Diseases"; "The Prevention of the Introduction of Diseases From Abroad"; "Medical Care and Treatment of Merchant Seamen"; "Headache" (radio).

National Society for the Prevention of Blindness: "Sight-saving Classes"; "The Eye: Its Relation To Safety."

Dept. of Health, 139 Center St., New York: "Fake Food Inspectors"; "A Report Card For Parents" (self-check on attention to child's health habits); "More Good News" (health conditions).

Detroit Dept. of Health issues for some weeks have been primarily of local interest.

Almost any of the above releases will be sent upon request to public health workers.

In New York State, at least, much use is made of the mimeographed sheets in answering letters.

A Board of Diet Strategy—The array of new low cost diet publications suggests an opportunity for leadership by the department or association.

Here is how one health agency went at it: Samples of the available publications were secured; two or three people made a tentative plan for widespread distribution and various forms of presentation; submitted this plan to representatives of all health and welfare agencies, newspapers, schools and other groups which were interested; and laid plans for a period of months.

Thus waste and over-emphasis were avoided, and competitive, helter skelter distribution was done away with.

Copy of a detailed plan for community low diet education will be supplied free.

American Child Health Assn., 450 7th Ave., New York:

Emergency Nutrition, by Henry C. Sherman. 4 pp. *3 cents.*

Food At Low Cost, by Lucy H. Gillet. 4 pp. *3 cents.*

Bureau of Home Economics, U. S. Dept. of Agriculture, Washington:

Adequate Diets For Families With Limited Incomes. 16 pp. *Free.*

Emergency Food Relief And Child Health. 10 pp. *Free.*

The Family's Food At Low Cost. 4 pp. *Free.*

Getting The Most For Your Food Money. 4 pp. *Free.*

Children's Bureau, Washington:

How To Spend Your Food Money. 1 p. *Free.*

Mimeographed news release on the above. *Free.*

President's Organization On Unemployment Relief, 1734 New York Ave., Washington:

Food And Nutrition Of Our Children. 4 pp. *Free.*

Evaporated Milk Assn., 203 N. Wabash Ave., Chicago:

Feeding A Family At Low Cost. 13 pp. *Free.*

"In Conference" at Piketown Garage—Mark Time and Ben Hustler are leading characters in a group that gets together in the Piketown Garage to settle affairs of state. Ben Hustler is the wise chap. The group appear from time to time in the *Public Health News* of the Dept. of Health of New Jersey. In the issue of Feb. 5, 1932, they talk about pasteurized milk. We have lifted the samples below from the middle of a three page discussion:

Ben tilted back until his chair hit the desk, hooked his heels over the one rung and blew smoke at the light bulb, hanging from the ceiling. "I take more stock in what scientific fellers know and can prove than in opinions handed out at the store. I suppose you heard about the cooked taste and that dirty milk is pasteurized to keep it sweet and how somebody's baby couldn't digest pasteurized milk and . . ."

"Yes sir. That's just what they said," agreed Mr. Time. "What about it? Mostly hooey," asserted Hustler. "It's easy to prove that milk which is pasteurized right tastes the same as raw milk. Get a crowd to taste milk from half a dozen bottles of each kind that have no marks on them and see what happens. They'll not be able to tell the difference."

"Don't they pasteurize milk to keep it sweet?" asked Mark.

"Maybe they used to but that isn't the main idea at present. With cleaner milk and cold refrigerators it isn't necessary. Pasteurization now is a kind of insurance against disease being spread by milk. It kills disease germs and makes any milk safer."—M. S. R.

Good Work Brings a Title—Paul H. Stevens has been doing such good work in the preparation of *Health*, New Haven Dept. of Health, that he has been given the title of assistant editor.

Journal of Social Hygiene, is " under new management " with Jean B. Pinney, as editor, and Doris G. Chandler, assistant editor.

Horace H. Hughes has left Community Council of Philadelphia to become administrative assistant (largely health education and publicity) of Tuberculosis and Public Health Committee, State Charities Aid Assn., New York.

SCHOOLS—CHILDREN

Every month during the school year the Oregon Tuberculosis Assn., 310 Fitspatrick Block, Portland, sends *Child Health* to the schools of the state. It is filled with stories and articles for pupils and teachers. Several other state and city associations issue material for the same purpose, but Oregon is different in sending a supplement bearing a calendar for the month and an outline poster design selected from contributions from the schools. Every month a new poster topic is announced. " The picture for the February calendar should be about teeth. . . ."

The usable form of the teaching and meeting material sent out by the Division of Infant and Child Hygiene, Indiana State Board of Health, is easily adaptable by states and cities. A plan, a program or an idea to a single mimeographed sheet makes it easy to sort out what any single teacher, parent-teacher association or other group wishes to use. If perforated at the left would there be any inclination to use a loose-leaf binder? In that case could a simple classification be provided? " May Day," " Plays," and so on?

Health Education in Elementary Schools: A Brief Bibliography for Classroom Teachers Who Are Planning Health Education Activities. American Child Health Assn., 450 7th Ave., New York. 5 pp. Mimeographed. *Free.*

Health Education: A Brief Bibliography for Administrators and Instructors of Health Education in Junior and Senior High Schools. American Child Health Assn. 4 pp. Mimeographed. *Free.*

References for Health Education in the Secondary Schools. From Health Trends in Secondary Education. American Child Health Assn. 17 pp. Mimeographed. *15 cents.*

The above are almost perfect bibliographies. They give enough information to help in making a selection from complete titles. *All are dated.*

CAMPAIGNS

April, 1932: Early Diagnosis Campaign sponsored by tuberculosis and public health agencies throughout the United States.

May 1, 1932: May Day—Child Health Day. Consult state committees in every state, or American Child Health Assn., 450 7th Ave., New York.

May 2–7, 1932: National Baby Week in department stores over the country which follow the lead of *Infants'* and *Children's Department* (trade journal), 3 East 35th St., New York.

North Carolina is conducting a " State-Wide-Milk-For-Health Campaign." Details of the essay, poster and rhyme contests are given in *Health Bulletin,* State Board of Health, Raleigh. March, 1932.

Again Illinois will observe Health Promotion Week, announced by the Governor for April 24–30, 1932. The following days are scheduled: " Health Sunday "; " Nutrition Day "; " Dental Health Day "; " Immunization Day "; " Parental Inventory Day "; " Screen and Garden Day "; " Child Health Day." Suggestions for each day's program are contained in *Illinois Health Messenger,* State Dept. of Public Health, Springfield. March 1, 1932.

There is danger of over-elaboration of the George Washington commemoration year so that children may wish that he had never been born. But

health workers may wish to consider what his life offers in health teaching values. A few examples of Washington material have been noted.

"Keep Fit Like Washington" quotes Mrs. Burton Harrison on Washington's athletic ability and vigorous physical life. *Schuylkill Health News*, 207 N. Centre St., Pottsville, Pa. March, 1932.

Washington's early fight against disease is noted in "Washington's Greatest Victory." *Health Pilot*, Terminal Sales Bldg., Seattle, Wash.

A few paragraphs on how George Washington caught smallpox and how he struggled against disease are in "Washington and His Travels." *Junior Crusader*, Wisconsin and Michigan Tuberculosis Assn. Feb., 1932.

The Robert Koch 50th anniversary will be celebrated this year by tuberculosis and other health agencies.

HELP WANTED

Notes On Tuberculin Testing, and a printed statement to parents comes from the Buffalo Tuberculosis Assn., 708 Ellicott St. Robert W. Osborn, executive secretary, very much wants something better for interesting parents in tuberculin test. What have you?

MAGAZINE ARTICLES

If you tell the editor of a magazine that you like his article on health you encourage the publication of more articles on health topics. If you tell an editor in friendly fashion why an article is undesirable you help to guard against more of the same kind.

Birth Control Symposium, by Ernst, Sanger, Dewey, and others. Includes cartoon by Wortman, and "Asiatic Conflict and Overpopulation." *Nation*, New York. Jan. 27, 1932. *15 cents.*

"Is Birth Control the Answer?" by Mary Breckinridge. *Harper's*. July, 1931. Frontier Nursing Service; birth control and peasant people.

"Only a Common Cold" (Jan. 9, 1932); "Cold Weather Is Good For You" (Jan. 30, 1932). *Literary Digest.*

"What Good Are Doctors?" by E. Robert. *Atlantic*. July, 1931. Appreciation; history.

"What Mental Tests Mean?" by Z. C. Franklin. *New York Herald-Tribune Magazine*. Jan. 10, 1932. Not to "grade" but to "guide" teachers and parents.

"Won't You Step Into My Parlor?" by T. S. Winslow. *New Republic*, New York. Jan. 6, 1932. *15 cents.* Cosmetic credulities and crimes.

HONORABLE MENTION

To Philadelphia Health Council and Tuberculosis Committee: For an effective annual report.

A Time of Increased Needs (Title); 12 pages 6 by 9 inches; ivory dull finish paper; 10 point type *in two columns;* one line heads running over the two columns.

The financial report indicates $16,664.58 for Health Education Service—Lectures, moving pictures, radio talks, lantern slides, window displays, exhibits, posters, pamphlets, publications, newspaper and periodical publicity, information and advisory service to aid the sick in securing examinations, treatment and care. Also $20,499.77 for Special Campaigns of Information—On tuberculosis among youth, Philadelphia Tuberculosis Conference, institutes, courses of instruction of health workers, and other activities. Follow-up in the control of cancer.

EDUCATIONAL MATERIAL

All new educational material and revised editions issued from national sources will be noted in this column *if samples of the publications are sent to the editor.* That most issues from some sources have been omitted is due to our inability to secure the material.

Possibly we who mention United States Government publications should remind our readers that unused postage stamps will *not* be accepted by the Superintendent of Documents or any other government office.

Also we might well remind our readers that most government publications may be secured free upon application to a senator or representative. State and local associations could make a point of emphasizing this opportunity.

Mothers and others may be encouraged to write for the popular government publications, with printed or mimeographed memoranda giving titles and addresses for sending their requests. Before preparing such material it may be well to write to the respective senators or representatives to learn if they will supply them to individuals.

Incidentally, all publications from whatever source should be examined before recommending them to others. Some are too out of date for use; others may not be useful to certain groups.

The official address for most government publications when cash is sent: Superintendent of Documents, Washington, D. C. It is *not* necessary to complicate the address by adding "Government Printing Office."

Foods and Cooking, Supt. of Documents, Washington. *Free.* Revised edition of classified list of government publications.

Ask the Life Extension Institute, 25 W. 43d St., New York, if you wish to receive a goodly succession of printed and letter arguments favoring the health examination.

A Survey of the Medical Facilities of the State of Vermont, by Allon Peebles; Midwives, Chiropodists, and Optometrists: Their Place in Medical Care, by Louis S. Reed; The Amount of Life Insurance in the United States, by Mary Dublin. Committee on the Costs of Medical Care, 910 17th St., N. W., Washington. *Free.*

The next three titles are supplied *free* by Metropolitan Life Insurance Co., New York. This group of publications is free from confusing ornament, but we regret that they are not dated.

Milk—An All-Round Food. Gives briefly and simply the facts about milk as a valuable food and cautions against using unsafe milk. It replaces "All About Milk." 8 pp.

Yesterday and Today. This new rebus for children about diphtheria prevention tells a story of two children who lived 70 years ago and two who live today. It takes the place of "The Prize Winner." This folder should help keep children smiling at the diphtheria clinic and interest them in being protected against diphtheria.

Standing Up to Life. Gives in combined and condensed form information that was contained in the two pamphlets, "Importance of Posture" and "Foot Health." 12 pp.

The Healthy School Child: What Parents Should Know About School Health Work. John Hancock Mutual Life Insurance Co., Boston. 12 pp. *Free.*

It is most important that parents not only know something of the health work the schools are doing, but that they realize how much this service means to the welfare of their own children, if home and school are to work in harmony in building a race of sturdy American youngsters.

I Give and Bequeath, Buffalo Tuberculosis Assn., 708 Ellicott St., Buffalo. 6-large-page folder, one of the few from health agencies setting forth why a health agency is desirable for mention in wills; warning against giving "for a narrowly prescribed purpose."

Books: Interesting Helpful And New, Public Health Center, Oakland, Calif., is a simple but effectively planned mimeographed folder. Send *2 cents* for a copy.

New list of publications; More Milk Smaller Bills (5 pp., revised). Evaporated Milk Assn., 203 N. Wabash Ave., Chicago.

BOOKS AND REPORTS

Tables of Food Values—*By Alice V. Bradley. Peoria, Ill.: The Manual Arts Press,* 1931. 127 pp. Price, $2.00.

This book of tables on food values is a welcome contribution to the literature on nutrition. It is divided into 2 parts; in the first are average servings, and in the second, 100-gram portions of commonly used foods. The headings of the tables, besides the measures and the weight, give the protein, fat, and carbohydrate weight in grams, the total calories, and the mineral shares and value as content of vitamin A, B, C, D, and E, the value as a source of bulk, and the acid or basic reaction of the ash, of all foods. With composite foods, like hash, pies, pastries, puddings, salads, sauces, and dressings, the recipes are written out. In the fore part of the book the sources of information, an explanation of the tables, the functions and sources of various food principles, and the method of using the tables are described. The book fills a long felt want, and should be indispensable for physicians, dietitians, and nutrition workers.

FRANCIS L. BURNETT

Approved Laboratory Technic. Clinical, Pathological, Bacteriological, Serological, Biochemical, Histological—*By John A. Kolmer, M.D., and Fred Boerner, V.M.D., assisted by C. Zent Garber, M.D. London: Appleton,* 1931. Price, $7.50.

This volume has been prepared by the authors under the auspices of the American Society of Clinical Pathologists with the object of establishing standards for the performance of laboratory examinations and to secure a wider application of clinical laboratory methods to the diagnosis of disease.

While the technic of the methods has been approved by the American Society of Clinical Pathologists, the particular methods have been chosen by the authors. The book is apparently intended for medical technicians, and the methods are given in such detail in most cases that a novice would have no difficulty in using them, yet in other cases certain details are lacking. Some of the approved methods described apparently are those in use in the authors' laboratory, while in some cases more satisfactory procedures used in other laboratories are not given. For instance, the incision in the heart in order to insert a pipette for making blood cultures probably has no advantage over the simpler method of inserting a sterile capillary pipette through the seared surface.

The book is divided into 5 sections, treating respectively of general laboratory, clinical pathological, bacteriological, serological and clinical methods. The first section includes chapters on the microscope and methods of micrometry, but omits what is considered to be a most accurate method of measuring small objects—the use of the Filar micrometer. Chapter III gives in detail routine and special laboratory procedures for examinations of different body fluids or discharges.

The section on clinical pathological methods is carefully done for the most part. A statement of the accuracy to be expected in counting blood cells would be helpful to the technician. The reporting of negative information as well as positive findings is emphasized.

The procedure for the benzidine test for blood seems to be unnecessarily repeated on pages 137, 172, and 200. The chapter on methods for the examination of urine is well illustrated, while that on feces gives some very useless illustrations, such as the mixing and straining of feces. The method described for the bacteriological control of wounds gives only a relative measure of the bacterial content, though, as originally designed, it attempted to control the quantity of material and the area over which it was spread, two points which are omitted.

Section III gives many procedures in common use as well as others not commonly used at present. The technic for prostatic massage is left to be developed by the laboratory worker. A somewhat cumbersome method of plugging test tubes by crossing long fibered cotton is described.

For the preparation of media, very cumbersome and seldom used methods for the determination of pH are described, including the use of litmus paper and the titration with phenolphthalein as an indicator. In the description of a method for the colorimetric determination of hydrogen ions, it is difficult to understand why the authors chose the Sorensen buffers instead of the easily prepared and stable primary phosphate-sodium hydroxide buffers of Clark and Lubs, which cover essentially the same range of pH. In describing a cumbersome and indirect method of adjusting the reaction of media, the authors vaguely hint at some change in the alkali-binding power of a medium as a result of heating, and use this as an explanation for the need of boiling the mixture when phenolphthalein is used as an indicator. These same buffers are said to interfere with the calculation of the amount of acid or alkali which must be added to a medium to secure a desired pH. An approved technic in many other laboratories where large quantities of media are to be titrated at different times is the use of a titration curve by means of which the amount of alkali necessary to bring any stated amount of a batch to any desired pH can be easily calculated.

On page 303, the method for streak plates in which only 8 to 10 streaks per plate are made involves the waste of at least half the plate. The authors have apparently missed the point in the use of the McIntosh-Fildes method for cultivation of anaerobes, for the mere presence of an electrically heated coil does not cause an increased oxidation of the hydrogen to water. They obtained the method from Wadsworth's *Standard Methods*, which points out that the catalytic agent, spongy platinum or palladium, is necessary to increase the rate of this oxidation. The approved technic for the acid fast stain, page 312, requires heating of the carbol fuchsin until a precipitate forms. This is what most laboratory workers try to avoid. Diphtheroid bacilli are said to show few if any granules when stained by Neisser's method, which is not the fact in most cases. Ponder's stain, considered by many to be a very useful one for staining granules, is not mentioned, nor is Dorner's stain for spores included in this book of "approved" technic.

The vanillin test for indol, though not recommended by the Society of American Bacteriologists, has the stamp of approval of the authors.

One of the best chapters is on bacteriological diagnosis. The regional distribution of bacteria and other pathogenic organisms is tabulated. On page 329, Sporotrichia and Blastomycetes are placed in the Gram negative groups, though correctly listed on pages 328 and 332. The chief deficiency in this chapter is in the methods for the diagnosis of fungus infections. No mention is made of animal inoculation for the diagnosis of sporotrichosis. The use of potassium hydroxide in the

preparation of material for the examination and culture of actinomyces is not mentioned.

The remainder of the book, including the sections on serological and clinical methods, is extremely useful and up to date.

Though some of the methods are not what might be considered "approved" in other laboratories, this does not detract from the usefulness of the many others given. If the book should serve only to bring about more uniformity in the use and reporting of laboratory procedures, its place would be well earned.

NEWELL R. ZIEGLER

The Right Honourable Sir Thomas Clifford Allbutt—*A Memoir—By Sir Humphry Davy Rolleston. London: Macmillan,* 1929. 314 pp. Price, $6.00.

The author rightly characterizes this book as the "life of a great personality," undertaken at the request of Lady Allbutt. He speaks of the difficulties due to the fact that Sir Clifford Allbutt kept very few letters, no diary, left no unpublished reminiscences, and few of his contemporaries are still living.

It is fortunate that Sir Clifford Allbutt was so well known and that he had written so much on medical subjects, and one can hardly credit the author's estimate of the difficulties in view of the excellent work which he has given us. Sir Clifford Allbutt was always a student and made records of his careful observations, which were contributed to a number of leading medical journals. In this country his contributions were well known and his System of Medicine especially so. He was always a stickler for good English, including correct pronunciation. It is a safe guess that his book, *Notes on the Composition of Scientific Papers,* is on the desk of every careful medical editor in this country. His book was one of the first of its kind and others have followed it more or less closely. It remains the standard.

To those who had the great privilege of knowing Sir Clifford personally, this book will be a delight. While he could at times be austere, he was in general a most delightful companion and always the courteous gentleman. With Lady Allbutt, he dispensed at his home in Cambridge a hospitality which those who were fortunate enough to partake of it can never forget. His acquaintance in America was wide, not only through visits, but through entertaining Americans in England.

The make-up of the book is all that could be desired. One feature we commend particularly to the writers of biographies. In the margin, even with the top line of each page, the date is given, in addition to which each year is given as a heading. The style of the author, in addition to its accuracy, is most pleasing. The reading is not only easy, but a pleasure, and on every page one meets either medical friends or those with whose work or writings he is familiar. We commend the book to all, and especially to those interested in the history of medicine and medical men.

MAZŸCK P. RAVENEL

The Black Death and Men of Learning—*By Anna M. Campbell. New York: Columbia University Press,* 1931. 210 pp. Price, $3.00.

The first third of this little book is a good summary of the more detailed studies which have been made of the 16 plague tractates published between 1848 and 1850. It gives an interesting picture of 14th century opinion with regard to the general causes of the disease (astrological) and the more immediate causes (corruption of the atmosphere). Several of the authors emphasize infection also—particularly one of the Arabic authorities, in spite of the fact that the Mohammedan religion frowned upon this theory. Ibn al-Khatib says:

But it belongs among evident principles that a demonstration evolved from tradition, if it is opposed to the perception of the mind and the evidence of the eyes, must necessarily be subjected to explanation or interpretation. And this, in the present instance, is exactly the idea of many who defend infection.

"The physician of Montpellier" (to whose theories Professor Campbell does not perhaps do full justice) also emphasized the importance of infection.

The last two-thirds of the book is devoted to a discussion of the effect of the Black Death upon the medical profession and the universities. Professor Campbell concludes from some rather fragmentary studies of the vital statistics of small groups that about a third of the intellectual leaders of Europe perished in the epidemic. The universities were very seriously crippled for a time but during the latter half of the century vigorous efforts were made to reëstablish learning in its necessary place. One result of the pressure which followed these terrible years was the beginning of a breakdown of the barrier between medicine and surgery and an improvement in the practice of the latter art. The practice of postmortem examination was also greatly stimulated.

To the public health worker perhaps the most interesting material is found on pages 112–119 which traces out the evolution of regulations for isolation and quarantine. In 1348 preliminary steps of this kind were taken in Venice, Florence, Lucca and Pistoia, long before the measures taken by Venice in 1374 and by Ragusa in 1377 which have been commonly cited as the beginning of modern quarantine.

C.-E. A. WINSLOW

Market Milk. (*2d ed.*) *By Ernest Kelly and Clarence E. Clement. New York: Wiley,* 1931. 480 pp. Price, $4.50.

The first edition of this book is dated 1923. The rapid changes in milk plant practices and improvements in milk handling machinery during recent years have led the authors to make a general revision of their work. Changes have been made in tables, illustrations, and the text which tend to bring the work up to date.

The authors have drawn freely from valuable data compiled by the U. S. Department of Agriculture, with which department they are connected. Their extensive practical field experience in market milk problems also adds to the value of this work.

A point of passing interest is the use throughout of the term "treated to kill bacteria" in place of the word "sterilized," in referring to what is commonly called the "sterilization" of dairy and milk plant utensils, equipment and containers.

This revision has materially increased the value of this book as a text or source of general information on the handling of milk during its passage from farm to market. W. D. TIEDEMAN

The Care and Feeding of Adults with Doubts About Children—*By Logan Clendening. New York: Knopf,* 1931. 317 pp. Price, $2.50.

This delectable book differs from most of the many tomes on personal hygiene in that it is always diverting and entertaining. The fact that all or most of the material has appeared in such sophisticated magazines as *The American Mercury* and *The Forum* guarantees its readability. The fact does not, however, assure its scientific reliability, and there is much in this book to cause a raising of eyebrows by the orthodox sanitarian.

Although this slightly vertiginous book demonstrates that hygienic information for the layman need not be dull, its very cleverness and its highly disputatious character obscure somewhat the really valuable message in it, which is not to make a fetish of any one aspect of personal hygiene. With this attitude

all progressive sanitarians will agree, but not many will concede the elaborately presented arguments of the author that health examinations for adults serve no useful purpose, that exercise is generally baleful, and that the new knowledge of nutrition is something to be ignored.

In a similar iconoclastic spirit, the author discusses clothes, tobacco, alcohol, sleep, diet, meat, salt, and reducing methods, and he gives vent to serious doubts about modern child care, birth control, sex, and psychology. All of it is written in a sparkling and good humored, if somewhat reckless, manner. There is a rather unfortunate chapter on nursing care, consisting mainly of extensive quotations from Dickens and Ring Lardner.

Every sanitarian will enjoy the book. It is heretical, but skepticism and argument never do much harm when tolerantly considered. The layman will also read it with zest and no doubt will derive profit from doing so. The book is admirably printed, as might be expected from its publishers. On the whole, it is to be recommended as a vivacious contribution to popular health instruction. JAMES A. TOBEY

Labor Agreements in Coal Mining —*By Louis Block. Foreword and Preface by Mary Van Kleeck. New York: Russell Sage Foundation,* Sept. 14, 1931. 513 pp. Price, $2.00.

The author, who is statistician with the department of industrial relations of California and was formerly with the Russell Sage Foundation, has sub-titled the present volume, "A Case Study of the Administration of Agreements between Miners' and Operators' Organizations in the Bituminous Coal Mines of Illinois."

In the desirability of establishing better coöperation in industry between labor and management, one is not primarily concerned with the conditions established or the rates of wages or the hours worked, but in the procedures by which the conditions have been brought about and to what extent the voice of labor has been heard in the process. Also, whether or not a procedure has been successful, it should be fully revealed since the ultimate object concerns the interests of the consumer.

"Coal challenges the capacity of all nations to organize its economic life"; the public often suffering because of adjustments made by force consequent upon labor or the employer being temporarily more powerful. Even the 30-odd years of endeavor in Illinois have not resulted in any formula which could be applied for all times without modifications even in Illinois. Yet it has resulted in 99 per cent unionization of miners and almost complete organization of operators, permitting collective bargaining and the keeping of Illinois mining production on a more enduring peace foundation than perhaps anywhere else in the world. The procedures developed in over 10,000 disputes are considered applicable to other industries.

Documentary material and field studies have supplied the basis of the study. The book offers first-hand material for the use of managers in industry, labor officials and students of labor problems—principally upon how disputes are settled in industry upon a day-to-day basis. The conclusion contains the author's summary of the Miners' Code relating to hiring and reinstating, discharging, mine management, wage disputes, and enforcement. The appendices, of 147 pages, contain agreements, constitutions and a chapter on the explanation of terms used in mining. The volume is well written, well printed and, withal, a bargain in price.

Outside of one's curiosity as to the methods of settling labor disputes, the sanitarian will find very little to interest him here. On the other hand he

will be amazed at the lack of all possible reference to health matters in the labor agreements effected despite the Disraelian observation that the wealth of a nation and, we believe, an industry, lies in the health of its people. This, of course, is no fault of the author's. It is simply the *status quo* and suggests to the sanitarian the question of how to interest the great unions and operators' organizations in a basic fundamental of labor disputes and of wealth, i.e., health.

A report upon the Health of Illinois Coal Miners written by the reviewer, though now somewhat old, may be found in the *Report of the Health Insurance Commission of the State of Illinois*, 1919, pp. 376–402.

EMERY R. HAYHURST

Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1931. *Washington, D. C.: U. S. Government Printing Office,* 1931. Price, $.85

This report is, as usual, full of information of the most interesting character. It agrees with the opinion of the Metropolitan Life Insurance Company that 1931 was an unusually healthy year, which is somewhat surprising, considering the depression and drought, the first of which has affected practically the whole country and the second a large area.

The presence of smallpox is still a blot on our record, though 7 states reported no cases. There was a mild outbreak of influenza during the first part of 1931, but on the whole the record is good. Perhaps the most disturbing occurrence of the year was the outbreak of infantile paralysis, which was more prevalent than for 3 years past, and especially common on the Pacific Coast, in Louisiana, Oklahoma, and a few of the North Central States, including the City of New York. Fortunately the type was mild and the death rate as well as resulting deformities was low.

Tuberculosis reached a new low, 68.5 per 100,000. In 1900, the rate was 201.9 per 100,000. The difference represents the saving of more than 160,000 lives.

Typhoid fever, which has been a diminishing disease, showed some increase in 1930. In certain states this could be traced to drought conditions and the necessity forced on farmers of taking water from unprotected streams and springs.

Both the case and death rates for diphtheria were the lowest on record. Pellagra on the other hand showed a slight increase, which was expected, and in some states seems to have been due to drought conditions, and resulting poor diet.

The great increase in aerial navigation has brought a new problem to our Service. The Surgeon General has taken part in discussions in Paris, looking to the prevention of importation of disease through infected animals and insects. Excellent experiments have been carried out by officers showing that mosquitoes can be brought from infected ports in the tropics to the United States. Other experiments in this connection concerned the rat proofing of vessels and the use of new, or new forms of old disinfectants.

The report asks for increased facilities to aid in the prevention of disease, including laboratories and personnel. Many other points of interest too numerous to mention in a review are discussed. On the whole, the report is one with which every health officer and sanitarian should be familiar, and it can be commended also to the general profession and the public.

MAZŸCK P. RAVENEL

The Doctor Explains—*By Ralph H. Major, M.D. New York: Knopf,* 1931. Price, $3.50.

This book is another of the crop of

books written by physicians for the instruction of the public. The statements given are, as far as we have detected, correct and authentic. We believe that there is too much history compared to the common facts which would be of value to the non-professional public.

Some of the chapters have headings which do not at all fit. For example, No. VI, "The Dangers of Sugar," is devoted to diabetes, and does not consider the use of sugar in the diet, which, in our judgment, would be of more use to the public than what has been given. The greatest authority on diabetes in the United States does not believe that the eating of carbohydrates produces diabetes.

The style of writing does not hold the reader's attention. The make-up of the book is excellent, and the illustrations are good.

MAZŸCK P. RAVENEL

Health Protection for the Preschool Child—*By George Truman Palmer, Dr.P.H., Philip Van Ingen, M.D., and Mahew Derryberry. A publication of The White House Conference on Child Health and Protection. New York: Century,* 1931. 275 pp. Price, $2.50.

This is one of the most illuminating reports resulting from the White House Conference. It represents an enormous amount of work in the collection of data and administration and computation of results. Those who heard Dr. Palmer give his excellent report at the Conference were much impressed by his graphic presentation and the lessons he drove home on the need for more extensive use of the preventive medical and dental facilities available in many cities and rural communities.

The report attempts to determine the extent to which advantage is taken of the preventive medical and dental services throughout the country. A house-to-house canvass, made by local representatives of nearly 1,000 different organizations, reached approximately 146,000 children in three-fourths of all cities over 50,000 population, and 37,000 children in rural areas of 42 states.

It begins with an excellent summary of the status of preventive measures. A complete and detailed analysis in tables and easily read charts is a revelation of what is being done—and not done—in those measures which we know to be effective for preserving the health of the preschool child. It forms a valuable addition to our knowledge of the status of the preschool child in the United States of America. The book is beautifully printed and bound.

RICHARD A. BOLT

Medicine in Virginia in the Eighteenth Century—*By Wyndham B. Blanton, M.D. Richmond: Garrett and Massie,* 1931. 449 pp. Price, $7.50.

A scholarly and exhaustive study of medicine, dentistry, and pharmacy in Virginia in the 18th century. The author has made a detailed search of the material available regarding this most interesting period of American history, and presents a vivid and well documented story of the time.

Particularly interesting are the chapters on Plantation Medicine, Revolutionary Medicine, and Washington's Physicians, Diseases and Death. The book is excellently printed and substantially bound. A. W. FREEMAN

The Nurse's Medical Lexicon—*Edited by Thomas Lathrop Stedman, M.D. New York: Wood,* 1931. 629 pp. Price, $2.00.

While naturally based on Dr. Stedman's larger work, *Stedman's Practical Medical Dictionary, The Nurse's Medical Lexicon* is not a mere abridgment but a very complete dictionary of au-

thoritative information adapted to the needs of any nurse at any stage of her career. Clear, concise definitions and pronunciations are given for thousands of terms used daily in medicine, surgery, obstetrics, dentistry, bacteriology, anatomy, materia medica, nursing, and hospital management. The definitions are so clearly stated that those with little or no technical knowledge will find them helpful.

A well arranged appendix gives both metric and apothecaries' weights and measures in comparative form as well as comparative temperature scales. A list of poisons and antidotes and a timetable of infectious diseases add to the practical value of the book.

From the viewpoint of a public health worker the definitions which have to do with terminology of public health are somewhat inadequate.

The pages of thin paper, with small but easily read print, are bound attractively in flexible leatherette. The book is of convenient size and easily handled. It should be readily available for every nurse as well as for any person who has frequent occasion to use scientific terms.

VIRGINIA A. JONES

Protozoan Parasitism of the Alimentary Tract. Pathology, Diagnosis and Treatment—*By Kenneth M. Lynch. New York: Macmillan,* 1930. xvii + 258 pp., 37 figs. Price, $3.75.

This book is the product of years of experience in a part of the United States where intestinal parasitism is not unknown, and the outgrowth of contacts with the problems of parasitology of the digestive tract which only a well ordered and busy clinical laboratory can give. Dr. Lynch has been the go-between in the fields of protozoölogy and medicine over a period of reorganization and progress during which new data as to the extent and variety of the protozoan infections of the human digestive tract have been revealed, on the one hand by stool examinations, and on the other by the study of tissues from autopsies. In these two fields Dr. Lynch has been both pioneer and collaborator with the practitioners. His book is therefore peculiarly valuable as interpretative of microscopical findings for the physician.

The book contains a discussion of morphology, life history, and occurrence of the principal protozoan parasites found in the human digestive tract, discusses dissemination and prevention of infection, and gives methods for treatment. As in the case of many pathogenic bacteria which may be present in the host without the well known catastrophic results, so also the parasitic protozoa may occur without, at the time of detection, being associated with the usual clinical signs of disease. Perhaps the greater certainty of detection of intestinal protozoans, by reason of their larger size, common habitat, and the prevalence of mixed infections, still further tends to confuse the opinions as to their pathogenicity. It is still quite possible that in certain complexes of conditions they may play very different rôles from those played in other complexes. The author is quite correctly conservative about expressing any far-reaching opinions on these matters, but his book will do much to stimulate inquiry and to aid the inquiring physician and clinical laboratory worker to widen the horizon of his interest and knowledge of this all-too-little tilled field.

C. A. KOFOID

The Story of Medicine—*By Victor Robinson, M.D. New York: Albert and Charles Boni,* 1931. 527 pp. Price, $5.00.

The author opens with a dedication of his work to Sir Ronald Ross in which he points out that "the wittiest of Romans, Horace and Juvenal, mocked the mosquito-net—and the mosquito

that strikes by twilight chanted its triumphant hymn amid the ruins of man's greatest empire." Consecutive chapters treat of the advancement of medicine from the Stone Age to the present, the last being devoted to "Medicine in America." Some 20 pages are given to biographical notes which are well selected and criticised. A good index follows.

Most of the volume deals with the progress of scientific medicine, but considerable space is given to magic, superstition, and quackery. Entirely too much space has been devoted to the gruesome story of the body snatchers and several pages are given to the murders committed by Burke and Hare. We cannot agree with the author that the details of this story belong in a history of medicine written for the public, even though, as he claims, Burke "in 9 months of murder accomplished more for anatomy than all the anatomical teachers in the British Isles." Physicians, of course, are interested in the history of how dissection of the human body was opposed, necessitating the stealing of bodies from their graves, and leading in some cases to murder to supply the demand. The stories have value in showing what doctors have had to contend with. For example, the Royal College of Surgeons in London petitioned against the legalization and regulation of the supply of subjects for dissection, in spite of the fact that a number of great physicians worked for it. The Archbishop of Canterbury, with his tremendous religious and political influence, also refused to recognize the needs of anatomy, and the House of Lords would not even consider the matter. It was not until 1832 that anatomy became a legitimate study, and the body snatcher ceased to exist.

Somewhat the same type of criticism attaches to the author's story of medicine in Rome and Greece. We find there sketches of the lives of the Caesars which are revolting in almost every detail. The reviewer has gone over a number of the leading histories of medicine written for the profession and as history, and fails to find such subjects discussed. Just why these stories, ending with that of Caligula, should be given in a volume for the public, we fail to understand.

It behooves a historian above all others to be accurate in his statements of fact. The last pages of the book, devoted to American contributions to medicine, are eloquent though perfervid. In his zeal to show what America has done, the author has been led into making claims which cannot be substantiated. He claims for America the discovery that typhus fever is carried by the body louse, though the credit belongs to Nicolle and Conseil, 1909–1910. In the same section, he gives to Noguchi the credit for the discovery of the germ of yellow fever. To use his own language in speaking of Sir William Osler's inclusion of Bishop Berkeley among the "Foremost Contributors" to medicine, this blunder "is inexcusable."

The history of the use of ether as an anesthetic is given at some length and correctly, including the discussion which followed as to whom the credit belonged —there having been four claimants— and the story of Oliver Wendell Holmes, who, when asked to decide, made the witty answer, "To e(i)ther"; yet later in the book the statement is made that "from the Massachusetts General Hospital first arose the vapor of ether that has spread like a benediction over the earth." It would be only fair to mention that chloroform was discovered independently by Liebig, Soubeiran, and Guthrie, all in 1831, instead of giving the credit to Guthrie alone.

The book is well written. Every page fascinates. It gives an intimate discussion of many of the personages of

the past, and abounds in quotations which have come down to us as epigrams and adages. In general, we believe that the book is better fitted for the medical reader than the public, as few physicians, outside of those especially interested in medical history, care to wade through ordinary historical texts, filled, as they often are, with dates and devoid of anecdotes. The printing and general make-up of the book are excellent.

MAZŸCK P. RAVENEL

L'Hygiène Sociale de l'Enfance (Health Measures as Applied to Children). *Dr. G. Banu. Published by Association Internationale pour la Protection de L'Enfance. Brussels,* 1930. 1st vol. 717 pp.

The author, who is a physician in Bucharest, Rumania, and who is actively interested in health work for children, published his report under the auspices of the International Association for the Protection of Children. The book seems to be the most complete account in a foreign language of the theory and practice of infant and maternal health work in a number of countries published in Europe in recent years.

An introductory discussion of eugenics and heredity is followed by a long section on maternal hygiene, which includes the pathological and social factors affecting maternal mortality and its causes and prevention. Statistics on maternal mortality for various countries are also given.

Under the heading " Aid to Mothers " is given a detailed account of medical attendance and various other forms of aid provided for expectant mothers and young mothers of small means in institutions or in their own homes; the work of mothers' mutual aid societies and of family allowance funds is also discussed. A separate chapter consists of brief statements on the maternal health work in 18 countries, including the United States, and another chapter is devoted to legislation on maternal welfare in a number of countries.

Under the problems of infancy the author takes up physiology, pathology, and growth, and infant hygiene. Particular emphasis is placed on breast feeding, but other methods of feeding are also described.

The author is of the opinion that protection of infant health is primarily the duty of the State. The State should devote its attention not only to mothers without means but also to well-to-do and educated mothers, because they, too, need advice on the proper care of their infants and themselves. Among the various agencies for infant and maternal welfare work the author describes infant health centers in the cities, traveling health centers in rural districts, the work of the visiting nurse, benefits paid to mothers who nurse their own children, mothers' mutual aid societies, maternity homes, and day nurseries. In treating his subjects, the author illustrates the conditions in different countries. In addition, a chapter is devoted to the work done in eight countries, also by the international organizations, such as the Health Section of the League of Nations, the League of the Red Cross Societies, the International Association for the Protection of Childhood, and a few others. Summaries are also given of the legislation in nine countries, including the United States. The last part of the report deals with international statistics of infant mortality and its causes.

IRA V. HISCOCK

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Influenza Statistics—A wealth of findings is recorded in this summary of the statistical survey of the 1918–1919 influenza pandemic. There seemed to be no geographical difference in incidence, which generally was highest among the very young. The complicating pneumonia caused most deaths among young adults.

BRITTEN, R. O. The Incidence of Epidemic Influenza 1918–1919. Pub. Health Rep., 47, 6: 303 (Feb. 5), 1932.

Anti-Health Education—The Health educator has not only the work of the quack and the nostrum vendor to undo, but occasionally he must rid the health educational machinery of the monkey wrenches thrown into it by the writers who will give editors anything the latter think the intelligentsia would like to read. This paper is an excellent example as its title suggests.

CLENDENING, L. The Myth of the Magnificent Brute. The Forum, Mar., 1932, p. 181.

Smoke Abatement—The story of the Schenectady plan for discouraging smoky chimneys. Fire inspectors were used successfully and economically.

COHN, M. "Where There is Smoke—" Munic. San., 3, 2: 60 (Feb.), 1932.

Esthetic Sewage Treatment—Modern plants in which sewage is treated without violence to the noses and eyes of nearby dwellers are described and pictured to prove that it can be done.

DANIELS, P. N., and CAPEN, C. H. Camouflaging Sewage Treatment Plants. Sewage Works J., 4, 1: 91 (Jan.), 1932.

County Health Work—The principles of rural health administration are presented clearly and convincingly in this excellent summary of the much discussed subject.

FREEMAN, A. W. Rural Health Administration. Pub. Health (Michigan Dept. of Health), 20, 1: 3 (Jan.), 1932.

Scarlet Fever Isolation—Provocative indeed is this excellent inquiry into the effectiveness of quarantine regulations. Instead of suggesting a uniform nation-wide code as some sanitarians have appeared to advocate, the author points out the clinical differences in patients that prompt individual considerations of each case in evaluating communicability.

GORDON, J. E. Epidemiology of Scarlet Fever. J. A. M. A., 98, 7: 519 (Feb. 13), 1932.

Fighting Pneumonia in Massachusetts—Telling of the threefold, epidemiologic, immunologic, and case-study project against pneumonia. The results are summarized with the statement that the mortality rates among the patients treated under the state scheme are half the expected rates, a very good showing.

HEFFRON, R. Massachusetts Pneumonia Program. New Eng. J. Med., 206, 7: 328 (Feb. 18), 1932.

In Praise of Toxoid—Written for nurses, this review of the advantages of toxoid as the immunizing agent against diphtheria will prove an excellent reference paper for all health workers.

KNOWLTON, M. Toxoid the Next Step in the Conquest of Diphtheria. Pub. Health Nurs., 24, 2: 73 (Feb.), 1932.

Food and the Eyes—"Evidence is set forth showing that one of the most constant signs of food deficiency is the pigmentation of the conjunctiva and the reduction of the light sense." So

begins the summary of an important contribution to the subject of nutrition.

LANE, L. A. Practical Points of Ophthalmic Practice. J.A.M.A., 98, 9: 726 (Feb. 27), 1932.

For **Dairy Bacteriologists**—The geometric mean is a more nearly correct average than the arithmetic mean over a normal distribution of bacterial counts of market milk: the latter is unreliable.

ROBERTSON, A. H. Averaging Bacterial Counts. J. Bact., 23, 2: 123 (Feb.), 1932.

School **Child Health Administration**—"The following discussion was prepared primarily with a view of attempting to interest the school physician in the entire field of school health education," begins this article which will interest a great many other health workers as well.

SUNDWALL, J. Health Education and the School Physician. School Physicians' Bull., 2, 1: 6 (Jan.), 1932.

Diluting Schick Test Toxin—Diphtheria toxin diluted with aqueous solution of peptone, sodium chloride and phenol retains its toxicity satisfactorily.

WHITE, B., *et al.* An Improved Diluent for Diphtheria Toxin in the Schick Test. J. Immunol., 22, 2: 93 (Feb.), 1932.

BOOKS RECEIVED

HEALTH AND SOCIAL EVOLUTION. By Sir George Newman. London: George Allen and Unwin, Ltd., 1931. 200 pp. Price, $1.75.

RONALD ROSS. DISCOVERER AND CREATOR. By R. L. Megroz. London: George Allen and Unwin, Ltd., 1931. 282 pp. Price, $3.75.

KEEPING MENTALLY ALIVE. By Ethel Cotton. New York: Putnam, 1931. 306 pp. Price, $3.00.

YOUR CHILD AND HIS PARENTS. By Alice C. Brill and May Pardee Youtz. New York: Appleton, 1932. 339 pp. Price, $2.50.

ECONOMICS OF FOOD CONSUMPTION. By Edith Hawley. New York: McGraw-Hill, 1932. 335 pp. Price, $3.00.

HEALTH AND ITS MAINTENANCE. A Hygiene Text for Women. By Bertha S. Dyment. Stanford University: Stanford University Press, 1931. 472 pp. Price, $3.50.

PREVENTION OF DISEASE IN CHILDHOOD. By Paul L. Parrish. New York: Saunders, 1931. 89 pp.

THE SOCIAL AND ETHICAL SIGNIFICANCE OF NURSING. By Annie W. Goodrich. New York: Macmillan, 1932. 401 pp. Price, $3.00.

PUBLIC HEALTH ORGANIZATION. White House Conference on Child Health and Protection, 1932. 345 pp. Price, $3.00.

HUMAN PHYSIOLOGY, 6th ed. Percy Goldthwait Stiles. Philadelphia: Saunders, 1932. 448 pp. Price, $2.25.

ELEMENTARY BACTERIOLOGY, 2d ed. Joseph E. Greaves and Ethelyn O. Greaves. Philadelphia: Saunders, 1932. 535 pp. Price, $3.50.

COMMUNICABLE DISEASES FOR NURSES, 2d ed. A. G. Bower and E. B. Pilant. Philadelphia: Saunders, 1932. 358 pp. Price, $3.00.

UNIVERSITY OF IOWA STUDIES. STUDIES IN CHILD WELFARE. The Development of Mental Health in a Group of Young Children. By Elizabeth Skelding Moore. Iowa City: University, 1931. 128 pp. Price, $1.15.

A FORTUNE TO SHARE. By Vash Young. Indianapolis: Bobbs-Merrill, 1931. 158 pp. Price, $1.50.

ARTIFICIAL LIGHT AND ITS APPLICATIONS IN THE HOME. Prepared by the Committee on Residence Lighting, Illuminating Engineering Society. New York: McGraw-Hill, 1932. 145 pp. Price, $1.50.

DIRECTORY OF PSYCHIATRIC CLINICS IN THE UNITED STATES. Compiled and edited by the Division of Community Clinics of the National Committee for Mental Hygiene. New York: Commonwealth Fund, 1932. 165 pp. Price, $1.00.

TROPICAL FEVERS. By N. P. Jewell, W. H. Kauntze, and A. T. Stanton. New York: Wood, 1932. 485 pp. Price, $6.00.

FOODS IN HEALTH AND DISEASE. By Lulu G. Graves. New York: Macmillan, 1932. 390 pp. Price, $3.50.

INTERNATIONAL STUDIES ON THE RELATION BETWEEN THE PRIVATE AND OFFICIAL PRACTICE OF MEDICINE, WITH SPECIAL REFERENCE TO THE PREVENTION OF DISEASE. Vol. III. By Sir Arthur Newsholme. Baltimore: Williams & Wilkins, 1931. 558 pp. Price, $5.00.

NEWS FROM THE FIELD

SURVEY OF HEALTH EDUCATION ACTIVITIES

THE first comprehensive survey of health education activities in Boston is being undertaken. This study will include the activities of the Boston Health Department, the schools, city medical institutions, private agencies, and commercial groups. The work will be carried on under the supervision of the health education committee of the Boston Health League, of which Clair E. Turner, Professor of Biology and Public Health at the Massachusetts Institute of Technology, is Chairman.

COLORADO STATE NURSES MEET

THE Colorado State Nurses' Association met at Pueblo on February 11 and 12. Eleanor L. Kennedy, of the State Bureau of Public Health, addressed them on New Mexico's public health organization and the way public health nurses are secured and kept in touch with the latest developments in public health.

WESTERN BRANCH A. P. H. A.

THE Western Branch Meeting in Denver will be from June 9 to 11. The subjects which western speakers will discuss will include: Consolidation of All Health Services in One Department; Local Health Councils; The Difficulties of Botulism Control in High Altitudes; Diphtheria Immunization; Potability of Farm Water Supplies; The Cause and Prevention of Mottled Enamel (a drinking water problem); Sanitary Control of Shellfish; Relapsing Fever; Health Values of a State Dairy Council; Adult Health Education; The Denver Infant and Maternal Mortality Study; Qualifications of Public Health Nurses; Generalized Public Health Nursing from the Health Officers' Standpoint; Public Health Nursing Education; Teaching Hygiene to Teachers; The A. B. C.'s of Vital Statistics; A State Mental Hygiene Program; Psittacosis; Coccidioidal Granuloma; Trichinosis; Silicosis and Its Relation to Tuberculosis; and others.

NATIONAL TUBERCULOSIS ASSOCIATION

IMMEDIATELY preceding the meeting of the Western Branch A. P. H. A. the National Tuberculosis Association will hold its Twenty-eighth Annual Meeting at Colorado Springs, Colo. The dates for this meeting are June 6–9. The program is to be in four sections—Pathological, Clinical, Sociological, and Administrative.

WORK OF CHILD HEALTH CENTERS IN MEXICO CITY

THE first child health center in Mexico was established by the National Department of Health in 1922 in Mexico City. By the middle of 1931 the number of such centers reached 14 in the Federal District alone, which includes a small territory in addition to Mexico City. These centers, under the supervision of the National Department of Health, give free examination to expectant mothers and children under 2½ years of age and advice on the care of health. In some cases, sick children and women are also treated. Visiting nurses assist the physicians at the centers and follow up the mothers and children in their own homes. In 1930, nearly 6,700 expectant mothers and 11,000 children made 160,000 visits to the centers.

It was found that the rate of still-

births among the expectant mothers attending the health centers was one-third of the rate among the same women before they attended the centers; the mortality rate of the children under 2½ years of age attending the centers was 4.8 per 100 live births against 28 per 100 such births among those in Mexico City as a whole.—*Revista Mexicana de Puericultura*, Mexico City, 2, 13, 1931.

KEYNOTE FOR MAY DAY, 1932

General Purpose of May Day, 1932

To focus the spirit of this year—which is a spirit of unselfishness, of sharing, of responsibility toward our neighbor—upon the needs of children in order that

Each child may be sheltered in its own home and share secure family life during 1932

Each child may have the essential food elements in each day's diet during 1932

Each child may have an adequate amount of clean and safe milk in 1932

Each child may have plenty of sunshine, sleep, rest and recreation

Each infant in 1932 may be born healthy, of a healthy mother who will live to love her child and take care of her family

and that all

The nineteen points of The Children's Charter—the Magna Carta of Childhood—may be put into practice in every community.—National Child Health Day Committee of the American Child Health Association.

COLUMBIA COURSE IN PUBLIC HEALTH

COLUMBIA University announces a new course in public health, as a part of the Home Study Department. The program consists of 2 courses, one a study of preventable diseases, the other a study of public health administration.

NEGRO HEALTH WEEK

THE program for the 18th annual observance of Negro Health Week is being arranged by the Annual Tuskegee Conference and other negro organizations in coöperation with the U. S. Public Health Service, city and state departments of health, and various voluntary agencies. The schedule for the week follows:

Sunday,	April	3	Mobilization Day
Monday,	April	4	Home Health Day
Tuesday,	April	5	Community Sanitation Day
Wednesday,	April	6	School Health Day
Thursday,	April	7	Adults' Health Day
Friday,	April	8	Special Campaign Day
Saturday,	April	9	General Clean-up Day
Sunday,	April	10	Report and Follow-up Day

HEALTH OF YOUNG WORKERS IN GERMANY

PHYSICAL examination of young workers, which is compulsory in many parts of Germany before the issuance of an employment certificate, is also repeated in some cities at a later date. In the city of Kiel one of the public health physicians examined 424 boys before they entered apprenticeship in various trades and examined them again two or more times during their apprenticeship which lasted from 2 to 3 years.

The results of this study prove in the author's opinion the correctness of the prevailing assumption that the physical development of young workers differs in the various occupations. Although this difference is due in part to constitutional variations and to the fact that stronger boys take up more strenuous work, still, the author finds, the occupation itself produces an effect on the growing body.

The more strenuous occupations seem in general to stimulate growth more than the others. This was particularly noticeable in the outdoor building trades, in which, according to the author, even

boys of medium strength showed in the second year excellent progress in their health and physical development, as revealed by a reëxamination.

Next followed the metal trades, in which the boys engaged in the more strenuous processes showed a better progress of physical development than those in less strenuous work. Among the wood-workers and book binders, improvement was slower, even when the boys were in good health at the beginning of their employment. Still less favorable was the situation among the clerks in mercantile establishments; often boys in these establishments who in the beginning were strong and well developed remained behind the boys in other occupations. Least satisfactory were the results obtained among the apprentices in the clothing trades and the unskilled workers, among whom the degree of physical development during the time of apprenticeship was below the average.—*Arch. f. Sociale Hygiene und Demographie*, Berlin, 6, 5: 329, 1931.

NORTHERN CALIFORNIA PUBLIC HEALTH ASSOCIATION

THE annual meeting of the Northern California Public Health Association was held in San Francisco, January 30, 1932. The election of officers was as follows:

President—Dr. Thomas A. Storey, Stanford University
President-Elect—Dr. Herbert F. True, Sacramento, Calif.
Vice-President—Dr. Wilfred Kellogg, Berkeley, Calif.
Secretary—Dr. Walter H. Brown, Palo Alto, Calif.
Treasurer—Mary E. Davis, R.N., San Francisco, Calif.

MILBANK ANNUAL MEETING

THE tenth annual meeting of the Advisory Council of the Milbank Memorial Fund was held on March 16 and 17. Dr. William Henry Welch, of the Johns Hopkins University, formally resigned as Chairman of the Council, a position he had held since its organization in 1922. His successor is Dr. Livingston Farrand, President of Cornell University.

Dr. Ray Lyman Wilbur, United States Secretary of the Interior, delivered an address on the economics of public health and medical care. He presented and commented on some of the main findings of the Committee on the Costs of Medical Care, of which he is the Chairman.

While this was the tenth anniversary of the Advisory Council, the Fund itself is 27 years old, having been incorporated in 1905.

MOTHER'S DAY

THE Maternity Center Association, 1 East 57th Street, New York, N. Y., will be glad to help local organizations everywhere to call the attention of their communities to the vital need for adequate maternity care. Mother's Day is Sunday, May 8. Material for speeches, programs for women's clubs, outlines for church services, and other helps for local campaigns are available free of charge to those interested in improving conditions in their locality.

LAETARE MEDAL AWARDED DR. MAHER

THE Laetare Medal has been awarded to Dr. Stephen J. Maher, of New Haven, Conn., internationally recognized authority on tuberculosis, by the University of Notre Dame. The medal is awarded annually to an outstanding Catholic layman. Dr. Maher, who is 71 years old, is the forty-ninth recipient of the award.

RESEARCH FELLOWSHIPS

THE National Tuberculosis Association announces a limited number of fellowships in social research as related

to tuberculosis, open to graduate students who have had special training in statistics, social science, or public health. Preference will be given to candidates who are interested in pursuing research in public health after the completion of this fellowship.

The fellowship grants will date from October 1, 1932. They are for a 12-month period and the fellowship grant amounts to $1,200 for that period with a month's leave for vacation.

Candidates should apply to Jessamine S. Whitney, Statistician, National Tuberculosis Association, 450 Seventh Avenue, New York, before June 1, 1932.

INFANT MORTALITY LOWEST IN 1930

THE lowest infant mortality rate ever attained by the cities of this country was that of 1930, according to the Statistical Report of Infant Mortality, based on the records of 860 cities in the Birth Registration Area of the United States, just issued by the American Child Health Association. The 1930 rate—62.2 deaths for every 1,000 live births—is 4 points lower than that of the preceding year, when it was 66.2.

REVERE, MASS.

THE first organized effort to induce parents of preschool children to have them immunized against diphtheria was launched by Dr. Francis Licata, member A. P. H. A., Chairman of the Board of Health, in March.

THOMAS W. SALMON LECTURES

THE first series of the Thomas W. Salmon Memorial Lectures will be given at the Academy of Medicine in New York, beginning April 8. The lecturer will be Dr. Adolf Meyer, of Baltimore, who was chosen by the committee in charge of the lectures in recognition of his services to American psychiatry.

These lectures were established in honor of the late Dr. Thomas W. Salmon, Professor of Psychiatry of Columbia University, and the first Medical Director of the National Committee for Mental Hygiene.

TYPHOID CARRIERS

THE State Health Department has announced that more than 500 persons in the State of New York are listed officially as typhoid carriers. The state's close supervision of carriers is indicated in the fact that only 7 cases of typhoid were traceable to them, 5 carriers being responsible.

PERSONALS

HELEN TEAL, R.N., of Kendallville, Ind., is the new Executive Secretary of the Indiana State Nurses' Association, Indianapolis.

MARY WALSH, R.N., of Gary, Ind., who formerly was part-time Executive Secretary of the Indiana State Nurses' Association and part-time Educational Director for the Indiana State Board of Examination and Registration of Nurses, is now full-time Educational Director of the latter organization in Indianapolis.

DR. J. NORMAN HENRY was appointed Health Officer of Philadelphia recently. For 17 years he served at the Pennsylvania Hospital, and was at one time clinical professor of medicine at the Woman's Medical College.

DR. JOHN G. ANDERSON, of Fayetteville, O., has been appointed Health Officer of Brown County, to succeed Dr. William L. Faul, of Russellville, O., who retired from active service.

DR. RAFAEL SILVA, member A. P. H. A., has resigned from the position of Chief of the Department of Public Health of Mexico, to devote himself exclusively to private practice. Dr. Gastón Melo will succeed him.

CHARLES GILMAN HYDE, Professor of Sanitary Engineering of the University of California, was recently appointed consulting sanitary engineer to the Director of Public Health of San Francisco, Calif. It should also

be noted that under the new City Charter of San Francisco the title of the health officer, after January 8, 1932, is " Director of Public Health."

DECEASED

GEORGE EASTMAN, founder and chairman of the board of the Eastman Kodak Company, internationally known philanthropist and inventor, killed himself on March 14. He was 71 years of age, and was an Honorary Fellow of the American Public Health Association.

CONFERENCES

April 4–8, American College of Physicians, San Francisco, Calif.

April 11–15, American Nurses Association, San Antonio, Tex.

April 11–15, National Organization of Public Health Nursing, San Antonio, Tex.

April 11–15, National League of Nursing Education, San Antonio, Tex.

April 19–23, 37th Annual Convention of the American Physical Education Association, Philadelphia, Pa.

April 30–May 7, Boys' Week.

May 9–10, American Association of Medical Milk Commissions, and the Certified Milk Producers' Association of America, New Orleans, La.

May 10–15, Annual Congress of The Royal Institute of Public Health, Belfast, Ireland.

May 12–13, Annual Pennsylvania Statewide Safety Conference, Harrisburg, Pa.

May 15–21, National Conference of Social Work, Philadelphia, Pa.

May 25–27, The Canadian Public Health Association, 21st Annual Meeting, in association with Ontario Health Officers' Association, Toronto, Ont.

June 2, 3, State and Provincial Health Authorities of North America, Washington, D. C.

June 6–9, National Tuberculosis Association, Colorado Springs, Colo.

June 9–11, Third Annual Meeting, Western Branch, American Public Health Association, Denver, Colo.

July 21–29, 100th Anniversary Meeting, British Medical Association, London.

July 25–30, Regional Conference of the World Federation of Education Associations, Honolulu, Hawaii.

July, 1932, International Conference of Social Work, Frankfurt.

August 15–18, International Congress for Light, Copenhagen.

August 29–September 3, International Congress of Physiology, Rome.

September 6–9, International Union Against Tuberculosis, The Hague.

October 12–16, 20th Annual Safety Congress and Exposition, Chicago.

October 24–27, 61st Annual Meeting, American Public Health Association, Washington, D. C.

School of Hygiene and Public Health of the Johns Hopkins University

The fifteenth session begins October 3, 1932

Opportunities for instruction and investigation will be offered in Public Health Administration, Epidemiology, Bacteriology, Immunology, Protozoology, Vital Statistics, Sanitary Engineering, Helminthology, Physiology as applied to Hygiene, Chemistry as applied to Hygiene, Sanitary Law, Personal, Social and Mental Hygiene, etc. Practical work is provided through the assistance of the city and state departments of health and other organizations, and arrangements are made for field work during the summer. Courses are organized on a quarterly basis, each quarter consisting of approximately eight weeks. Students may enter the school as candidates for a degree or as special students at the beginning of any quarter. Men and women are admitted on the same terms.

Courses are arranged leading to a Certificate in Public Health, and to the degrees of Doctor of Public Health, Doctor of Science in Hygiene, and Master of Science in Hygiene. The details in regard to the requirements for matriculation in these courses will be forwarded upon application.

For further information or catalogue address:

DEAN, SCHOOL OF HYGIENE AND PUBLIC HEALTH
615 North Wolfe Street
Baltimore, Maryland